

CONFORMITY AND CREATIVITY IN SCHOOL CHILDREN
AS INFLUENCED BY RELIGIOUS AFFILIATION AND
TYPE OF SCHOOL ATTENDED

Charles Joseph Marino, A.B.

Thesis presented in partial fulfilment
of the requirements for the degree of Doctor
of Philosophy in the Faculty of Social Science,
University of Edinburgh,
July, 1968



TABLE OF CONTENTS

Acknowledgements

SECTION ONE: GENERAL INTRODUCTION

1. GENERAL INTRODUCTION

I. Purpose	3
II. The General Line of Argument	5
III. Positive Aspects of the Relationship ...	7
IV. Outline	9

2. RELIGION AND AUTHORITARIANISM

I. Authority and Authoritarianism	13
II. Religion and Authoritarianism	17
III. Empirical Aspects of the Relationship ..	21

3. CONFORMITY

I. Introduction	38
II. Three Distinctions	42
III. Four Prototypical Situations	50
IV. A Parameter of Generalizability	67
V. Prestige Suggestion and Authoritarianism	83

4.	CREATIVITY	
	I. An Overview	95
	II. The Psychoanalytic Theory	99
	III. The Associative Theory	108
	IV. Synectics	122
	V. Creativity as Divergent Production	131

5.	IMPLICATIONS	
	I. This Chapter	143
	II. Creativity, Authoritarianism, Conformity	146
	III. Creativity and Catholicism	156
	IV. Catholic Education and Authoritarianism	159

ACKNOWLEDGMENTS

SECTION TWO: THE EMPIRICAL STUDIES

6.	HYPOTHESES, SUBJECTS AND SAMPLES, PROCEDURES	
I.	The General Hypotheses	170
II.	The Experimental Hypotheses	183
7.	RESULTS	
I.	The Cross-National Study	207
II.	The American Study	224
8.	DISCUSSION AND CONCLUSIONS	
I.	Factors and Variables	241
II.	Discussion	261
REFERENCES		

Acknowledgements

A great many people helped in the completion of this work. My thanks are particularly due to Dr. Halla Beloff, Department of Psychology, University of Edinburgh, for supervision, advice, and encouragement.

Thanks are also due to Professor John Butcher, Department of Education, Manchester University, who supervised the early stages of the project and Dr. Boris Semeonoff, Acting Head, Department of Psychology, University of Edinburgh.

Many other people also gave willingly of their time. To all the following, I wish to express my gratitude: Professor G. Seth, Department of Psychology, Queen's University, Belfast; Dr. T. Kellaghan and Dr. Liam Gorman of the Education Research Center, St. Patrick's College, Dublin; Mr. Dwight Rowe, Director of Educational Research and Mr. Lyons of the Department of Education, Milwaukee; Monsignors Monaghan and Quill, Cathedral House, Edinburgh; Father Harold Ide, Assistant Superintendent of Schools, Milwaukee Archdiocesan; Mr. D.M. Paulin, Headmaster,

Annadale Grammar School, Belfast; Mr. J.M. Malone, Headmaster, Orangefield Boys' Secondary Intermediate School, Belfast; Rev. Bro. J.M. Murphy, Headmaster, Christian Brothers, Grammar School Belfast; Mr. V. McGeown, Headmaster, St. Augustine's Secondary Intermediate School, Belfast; Miss E.B. Cathcart, Headmistress, Carolan Grammar School, Belfast; Miss J.A.W. Beatly, Headmistress, Orangefield Girls' Secondary Intermediate School, Belfast; Mother Helena Collins, Dominican College, Belfast; Mother Marius, St. Monica's Secondary Intermediate School, Belfast; Mr. Kosimiki Principal, Sholes Junior High School, Milwaukee; Monsignor Keane, Principal, Messmer High School, Milwaukee; Fr. Altenhoffen, St. Mathias School, Milwaukee; Miss Baird Headmistress, St. Thomas Aquinas Secondary School, Edinburgh; Mr. Moncrieff, Headmaster, Bellview Secondary School, Edinburgh; Mr. McLaughlin, Headmaster, St. Anthony's Secondary School, Edinburgh; Sr. M. Leontia Spillane, Holy Faith Convent, Dublin; Fr. Steen, St. Paul's Secondary School, Dublin; Dr. R. Cathcart, Headmaster, Sandford Park School, Dublin; Miss Pike, Headmistress, Bertrand and Rutland High School, Dublin; Mrs. Margaret Agnew, Department of Psychology, Queen's University, Belfast; Miss Katy Coblentz, University School, Milwaukee; Mrs. Fiona Cowles, Godfrey Thompson Educational Research Unit, Edinburgh; the teachers of all

the classes we disrupted and their students. Thanks are also due Messrs. M.P. Cowles and J.R. Burns for their kind assistance at a critical moment..

Finally, I wish to thank my wife, dian, who was the other experimenter in every case and supported the project throughout.

July, 1968

C.J. Marino

SECTION I : GENERAL INTRODUCTION

CHAPTER ONE : GENERAL INTRODUCTION

CHAPTER TWO : RELIGION AND AUTHORITARIANISM

CHAPTER THREE: CONFORMITY

CHAPTER FOUR : CREATIVITY

CHAPTER FIVE : IMPLICATIONS

CHAPTER ONE: GENERAL INTRODUCTION

I. PURPOSE.

II. THE GENERAL LINE OF ARGUMENT.

III. POSITIVE ASPECTS OF THE RELATIONSHIP.

IV. OUTLINE.

I. PURPOSE

... to force standards, social values and concepts on another person is to stifle his potential creativity and difference. (Moustakas, 1967, p.9)

This research is an attempt to theoretically expand and empirically demonstrate the validity of the above statement. The statement is phrased in terms of social factors affecting an individual behavior and that is the general approach here. The particular social-personality syndrome of interest is authoritarianism-conformity. The individual behavior considered is creativity and its most essential aspect, difference.

Creativity is essentially an individual phenomenon which is facilitated or inhibited by social and personality variables. The usual approach to understanding the role of these variables in creative production has been what might be termed successive particularization. An aggregate of individuals is divided into creative and uncreative. Then each of these aggregates is successively particularized, for example into artists and scientists, physical and social scientists, psychologists

and anthropologists, and so on. At each stage social and personality variables are compared. The strength and weakness of this approach is, for our purposes, its attention to the individual. Clearly, specifying an aggregate of individuals on the basis of creativity, interests, occupations, and specializations is one means of arriving at characteristics which are relevant to creative performance. On the other hand, if one is ultimately interested in the social factors affecting this particular behavior, studying aggregates of individuals and interpreting the results into theoretical formulations about groups is less than direct. The more appropriate approach would be to study a group sharing common aspects in a 'real' rather than ^{IN A} specified sense.

A 'real' group is the subject herein. Rather than starting with an aggregate of individuals, particularizing them, and comparing the creative with the uncreative, we start with a group known to evidence a given social-personality syndrome and compare them with another group known to evidence a lesser degree of the same syndrome. The groups compared are Catholics and Protestants; the social personality syndrome distinguishing them authoritarianism-conformity. The measures on which they are compared are selected mental ability factors critical for creative thinking.

II. THE GENERAL LINE OF ARGUMENT.

Authority, a general aspect of religion and a particularly salient characteristic of Roman Catholicism, is a necessary condition of the broadly defined phenomenon of authoritarianism. Authoritarianism is clearly related to conventionality and the latter is in turn related to specific kinds of social acquiescence. The empirical aspect of this research is concerned with the delimitation of the relationship between authoritarianism-conformity and tests loading on known factors of a particular conceptualization of the phenomenon of creativity.

The relationship between authoritarianism-conformity and creativity is examined within the following frameworks. Carefully matched samples of adolescents from The United States (Milwaukee, Wisconsin), Northern Ireland (Belfast), Eire (Dublin), and Scotland (Edinburgh) were administered selected tests of the divergent production abilities. Furthermore, within each country two matched samples were tested: Catholics and Protestants. A further study was carried out in the United States between matched samples of Catholics attending Catholic schools, Catholics attending public (state supported) schools, and Protestants attending public schools.

Clearly, if religious conservatives are more authoritarian and if these variables are negatively related to creativity, then religious conservatives should be less creative. Further, since religion is a general social phenomenon, the more relevant the role it plays in any particular culture the greater its effects and similarly, the stronger the emphasis on religion (e.g. in the formal educational curricula) the greater its effects. The general experimental hypothesis is then that relatively high religious conservatism will lead to relatively low creativity. Catholics will evidence less creativity than Protestants.

III. POSITIVE ASPECTS OF THE RELATIONSHIP.

The essentials of the positive side of the relationship between authoritarianism-conformity and creativity stem from social and thus personality phenomena. Both conformity and conventionality, and creativity and originality are necessary for the progression of ordered society. Society itself is dependent on order: shared values, common norms, etc.... This order is imposed through pressures to conform; institutionalized in the forms of folkways, norms, laws, or religions and personalized by parents, teachers, priests, etc.... There could be no independent existence of society or conformity. Each is necessary for the existence of the other.

Creativity is equally necessary for the progression of ordered society. Without the push and pull of difference society would become static, progression impossible. A society without creativity would be analagous to a species with its genetic pool unalterably determined; ultimately a subject of its environment, eventually a prey to every other species, and finally destined to absorption or extinction. The current interest in creativity in our society is attributed by Taylor (1964) and others to the launching of "Sputnik"; that is to exactly this sort of causation.

The positive aspect of the relationship between creativity and conformity then, stems from the necessity of each for the progression of ordered society. The implications of both are, in the first instance, culturally defined and in the second, interdependent. Conformity without creativity produces the "Organization Man" or "Pyramid Climber." Creativity without conformity the insane. (Even so the "Organization Man" creates and the insane conform.) Neither type is particularly advantageous for the progression of ordered society though both are to some extent produced by society.

The logical questions which follow are 'how much creativity' and 'creativity in whom.' These two questions are viewed as fundamentally different herein. Both qualities are potential in everyone in varying degrees and are to a large extent dependent on social situations. The question dealt with is 'how much?' and the answer sought is qualified by 'and where?' The desirability of increasing the ratio of creativity to authoritarianism-conformity is assumed and situations which decrease this ratio are considered through their influences on creative production.

IV. OUTLINE.

The dissertation is divided into two main sections. In the first of these the relevant aspects of the literatures of religious behavior, authoritarianism, conformity, and creativity are discussed. In the second section the hypotheses derived from the first, tests, experimental designs, results, discussion of results and general conclusions are presented. The following is a brief outline indicating the contents of each of the remaining chapters.

SECTION ONE.

Chapter Two deals with the general aspects of authority, religious behavior, and authoritarianism. The relationship of religion in general and Roman Catholicism in particular to political conservatism, racial prejudice, and authoritarianism is also discussed.

Chapter Three deals with conformity which is argued to be the consequent of the interaction of social and personality variables operating within a situation. A detailed consideration of the development of techniques used to measure conformity is followed by a discussion of the need for a language with which to specify the characteristics of situations.

The concluding remarks are concerned with the relationship of conformity and authoritarianism.

Chapter Four. In this chapter four theories of creative behavior are considered: Psychoanalytic, Synectic, Associative, and Structure of Intellect. Psychoanalytic theory is of particular relevance because of its unique and virtually exclusive concern with the creative process. Synectics represents an operational statement and Associative Theory a recent and experimentally adaptable approach. The Structure of Intellect Model is also discussed with special reference to divergent production.

Chapter Five brings the preceding considerations to bear on the relationship of authoritarianism-conformity and creativity as evidenced by the group, Roman Catholics. The central argument is that we expect this group to reflect low creativity because of the high degree of authoritarianism and conformity evidenced by its members.

SECTION TWO.

Chapter Six. The specific hypotheses, their rationales, and tests are presented in this chapter. This is followed by an explication of the subjects, samples, procedures, and experimental designs utilized in these studies.

Chapter Seven. This chapter contains a statement of the tests, results, and statistical interpretations of results.

Chapter Eight. This chapter contains a discussion of the results and the general conclusion drawn from them.

CHAPTER TWO: RELIGION AND AUTHORITARIANISM.

I. AUTHORITY AND AUTHORITARIANISM.

- A. Authority and Reason.
- B. Authority and Freedom.
- C. Authority and Authoritarianism.

II. RELIGION AND AUTHORITARIANISM.

- A. Religion.
- B. Authoritarianism.

III. EMPIRICAL ASPECTS OF THE RELATIONSHIP.

- A. Religiosity.
- B. Religiosity and Authoritarianism.
 - 1. Religion and Politics.
 - 2. Religion and Racial Prejudice.
 - 3. Religion and Authoritarianism.
- C. Conclusions.

I. AUTHORITY AND AUTHORITARIANISM.

Our first consideration must be of the relationship between authority and authoritarianism. The fact that this relationship will later be explicated in terms of religion (cf. p. 17) implies that religion and authority were assumed coincidental not necessarily religion and authoritarianism.

The relationship between authority and authoritarianism is that of a necessary condition and one of its possible consequents. Authority will not be explicitly defined here, rather dissociated from certain of its unnecessary consequents (implications). "It is inconceivable that we could get to know as much as we do about the world we live in if we were not able to rely on authority." (Rokeach, 1961, p. 232) Obvious as this statement might be, the evident connotations of authority belie its realization and justify its inclusion. The following discussions of authority and reason and authority and freedom are based on those of Rokeach (1961).

A. Authority and Reason are not necessarily antithetical. "Thus Trueblood reminds us that it is a popular error to believe that 'authority and reason are somehow rival ways of coming to the truth.'" (Rokeach, 1961, p. 232) Indeed there are those who would seem to maintain the inseparability of

authority and reason. Friedrich (1958, p. 29) states:

...but are reasoning and authority so-antithetical? Does authority have no basis in reason? The following analysis seeks to elucidate the proposition that authority and reason are closely linked, indeed that authority rests upon the ability to issue communications which are capable of reasoned elaboration.

(cf. Rokeach, 1961.)

This statement is clearly more philosophical than psychological. That is, as stated, it is not particularly amenable to experimental disproof. Nevertheless, in dissociating authority from unreason or the necessity of unreason, it serves to clarify the logical and thus psychological distinction between authority and authoritarianism.

B. Authority and Freedom are not necessarily antithetical. Hendel (1958, pp. 5-6) maintains:

We are further confused by an uncritical philosophy unfavorable to authority in any form The free, responsible individual is thought of as self-sufficient We fail to realize that man can enjoy self-sufficiency only in a social order where there is an effective authority. But in popular philosophy there

is no room for this truth.

The mind is also closed to the need and value of authority in society by a long-prevalent optimistic notion of history The harshness as well as the crudity of primitive human existence is seen happily left behind, and authority is one of the antiquated relics of the past History is the "story of freedom" and the goal of it is a state of freedom without authority. (cf. Rokeach, 1961.)

Authority need not imply authoritarianism. The free individual who on the basis of reason decides which authorities to rely on and when to do so is clearly not authoritarian.

C. Given the dissociation of authority from the necessary implications of 'not reason' and 'not freedom', it follows that authority and authoritarianism are not related in a one to one way. Among other things authoritarianism implies, "Conventionalism. A rigid adherence to conventional, middle-class values" and "Authoritarian Submission. A submissive, uncritical attitude toward idealized moral authorities of the ingroup." (Brown, 1965, p. 487) The latter do, in fact, imply unreason and constraint.

Fromm (1941) distinguishes between 'rational' and 'inhibiting' authority (for our purposes authority and authoritarianism).. He contrasts the relationship between teacher and student with that of owner and slave. In the former case the object of the relationship is to decrease psychological distance; the latter exemplifies the converse. The illustration is noted here because it demonstrates that (a) all authority does not imply authoritarianism but (b) there are similarities between authority and authoritarian relationships.

On the basis of this line of reasoning one hopes to specify a particular exercise of authority (religion) as it does and does not relate to authoritarianism. Religion does of course, imply authority both logically and empirically. It can logically imply authoritarianism. Does religion evidence authoritarianism empirically? After defining religion and authoritarianism, the brief survey which follows presents the case for a positive but qualified answer to this question.

II. RELIGION AND AUTHORITARIANISM.

A. Religion. Religion is one of the general phenomena which will not be explicitly defined here. For the moment we shall consider some of the indices used to measure religious behavior; any combination of which represents its empirical definition for a particular study. Typical indices of religious behavior include church membership, frequency of attendance, rate of private prayer and/or worship, attitudes toward religion, beliefs about religion, and contributions to church funds. These are but a few - the most frequently used though not necessarily the most valid - there are many others, some pertaining to individual religious activity as the former (e.g. the response to direct inquiries such as 'religion?' or 'how important is religion in your life?') and others more specifically applicable to the religious behavior of groups of people over a period of time (e.g. numbers of articles published about religion, church incomes, or religious content of popular literature).

Clearly the numbers and kinds of measures as well as the accuracy of the measures utilized at various times are crucial determinants of the validity of any estimate of religious behavior or degree of it (religiosity). Thus, estimates of church membership in the early twentieth century did not al-

always include women or children in some Protestant churches. Further, estimates of membership in The United States before 1936, may have been misleading because of disadvantageous tax legislation at that time but not later. (cf. Argyle, 1958.) Similarly, varying pressures to attend services make 'frequency of attendance' a dubious basis for inducing that Catholics are, for example, more religious than Protestants. Argyle states that 'frequency of attendance' "should always be combined with other measures" such as rate of private prayer and worship, (1958, pp. 5-6). Consequently, the implications of various studies comparing religions or religious denominations are initially limited by the kinds and numbers of indices employed as well as the means through which they are attained.

The types of studies which will be briefly examined are, as adumbrated, those dealing with the 'authority' aspects of religions and religious behavior which have bearing on the less general issue of authoritarianism. The coincidence of religion and authority is not argued here. The assumption is not, however, unjustified. Houston Smith (1958, p. 90), for example argues that there are at least six inescapable aspects of religion, "...that appear so regularly as to suggest ... that no religion which proposes to speak to mankind at large can expect to elude them indefinitely. One of these is authority."

B. Authoritarianism. The basic measures of religion (empirical definitions) have been discussed. The sorts of personality and social concomitants which are discovered by the principal measure of authoritarianism (the F Scale) are outlined below and will serve as the framework of what is meant by authoritarianism.

Conventionalism. A rigid adherence to conventional middle class values.

Authoritarian Submission. A submissive, uncritical attitude toward idealized moral authorities of the ingroup.

Authoritarian Aggression. A tendency to be on the look out for, and to condemn, reject, and punish people who violate conventional values.

Anti-Intraception. An opposition to the subjective, the imaginative, the tender minded.

Superstition and Stereotypy. The belief in mystical determinants of the individual's fate, the disposition to think in rigid categories.

Power and 'Toughness'. A preoccupation with the dominance-submission, strong-weak, leader-follower dimension; identification with power figures; overemphases upon the conventionalized attributes of the ego; exaggerated assertion of strength and toughness.

Destructiveness and Cynicism. A generalized hostility, vilification of the human.

Projectivity. The disposition to believe that wild and dangerous things go on in the world; the projection outwards of unconscious emotional impulses.

Sex. Exaggerated concern with "sexual goings-on."

(Brown, 1965, pp. 487-488)

The above nine indices of implicit anti-democratic trends, Pre-Fascism or authoritarianism (Adorno et. al., 1950) provide a definition of authoritarianism. Express fascistic tendencies (explicit ideologies) were measured by the Ethnocentrism, Anti-Semitism, and Political-Economic Conservatism Scales. The F Scale was developed to tap the basic personality dimensions underlying high scores on the other three without specifically referring to them. Later, of course, Rokeach (1956, 1960) constructed the Dogmatism Scale which has the theoretical advantage of measuring ideological structure rather than ideological content and thus authoritarianism of the left as well as of the right.

III. EMPIRICAL ASPECTS OF THE RELATIONSHIP.

A brief summary of some of the findings pertaining to the relationship between religion and some of the particulars of authoritarianism is presented below. It should be noted in advance that not only does religion imply authority but also that members of some religions evidence, on the average, more authoritarianism (a possible consequent of authority) than others. The discussion begins with a consideration of these differences.

A. Religiosity. For the purposes of this discussion we shall define religiosity as conservative or traditional religious belief. Not all studies make the distinction between the religiosity of members of various churches. Many simply deal with religious vs. non-religious people. The findings of Allport, Gillespie, and Young are representative of the types of measures of religiosity currently utilized and the differences in average religiosity between churches. On the basis of belief in deity, belief in immortality, attendance, prayer and reverence, the authors state, "Without a single exception we find a steady progression: Roman Catholics are most religious by all these measures; Protestants less so; Jews still

less; and those who declare themselves as favoring a new type of religion are the least religious of all" (1948, p. 25). Furthermore, on the basis of their Inventory of Religious Belief, Brown and Lowe (1951) found that, although Catholic non-members' scores were equal to those of Protestant non-members, the orthodoxy of Catholic members was greater than that of Protestant members. Given this well supported basis for the relative religiosity of various churches, we can examine the data relating religion and authoritarianism as well as that relating religiosity to authoritarianism.

B. Religiosity and Authoritarianism. The subsequent discussion follows the general outline of that presented by Argyle (1958). The general conclusions are the same but particular attention is paid here to the necessary qualifications. "Authoritarianism is higher for religious people in general, particularly for Catholics and other religious conservatives, though it is probably low for Unitarians, Jews and members of minor sects." (Argyle, 1958, p. 91) There are three ways of more or less directly supporting this statement, surveys and research in three areas: political conservatism (usually evidenced by voting behavior), measures of racial prejudice or ethnocentrism, and studies directly related to authoritarianism,

as defined by the F Scale. Although the F Scale does not measure a single factor, these types of studies encompass the most important variables involved.

1. Religion and Politics. If religion is in fact related to authoritarianism, we would expect religious people to be more politically conservative than non-religious people. Furthermore, if religiosity is related in the same way, we would expect members of the more conservative churches to be more politically conservative than members of the less orthodox churches. The expectations, in the first case, have been demonstrated many times. "Religious people are more conservative in politics than non-religious people." (Argyle, 1958; cf. Eysenck, 1954; Adorno et. al., 1950.) The second expectation is confused by the facts that (a) there are objections to generalizing from attitude scales to denominational differences and (b) voting behavior or reported voting behavior, the principal index of political attitudes, may be dependent upon many things besides political attitudes.

Religious people are more conservative than non-religious people as evidenced by attitude scales (Carlson, 1934). A number of American studies have shown Catholics to

be more conservative than Protestants and the latter more conservative than Jews (e.g. Sappenfield, 1942). Yet these findings are not necessarily conclusive. These scales all contain items which can be construed as ideologically related to the teachings of the more orthodox churches and as a result may be interpreted as exaggerating the conservativeness of attitudes held by members of those churches. For example, if these scales contained items on sexual ethics or other matters on which the Roman Church's teachings are conservative, the conservatism demonstrated by Catholic respondents would have been defined before the fact. If, on the other hand, the scales contained items regarding drinking or gambling the Catholic respondents might not score as more conservative than others. (cf. Nowlan, 1957.)

On the basis of voting behavior or reported voting behavior, one would also expect denominational differences to be dependent on or a function of religiosity. The overwhelming fact is, however, that Catholics in Great Britain and The United States vote liberal (Labour and Democratic respectively). Furthermore, this is not solely a function of class differences (Lipset et. al., 1954; Lazarfield, 1944; Centers, 1951). If the hypothesis is correct, if Catholics are more politically conservative than Protestants, then there is something wrong with assuming that voting behavior or reported

voting behavior is a reliable indicator of political attitudes. In fact this could well be the case. Catholics in Great Britain and The United States may vote as they do because of historical tradition. (cf. Lubell, 1956.)

There is then, general agreement in the literature with regard to the fact that religious people are more conservative politically than non-religious people. However, on the basis of conservative attitudes and voting behavior, there would seem to be difficulties in distinguishing between the more and less 'religious' denominations.

2. Racial Prejudice. Argyle (1958, p. 83) concludes that, in contrast to non-religious people, "religious people are more prejudiced against Jews and Negroes, as shown by attitude scales on racial attitudes." Bearing in mind the previously detailed indices of religious behavior, the implications of this statement are somewhat more limited and less paradoxical than they might appear.

In the Authoritarian Personality, religious affiliation was tapped by the question "What is your religion?" (Adorno et. al., 1950, p. 208). When considering subjects who

answered 'none', as opposed to others who wrote in something (religious vs. non-religious) Nevitt Sanford writes, "There seems to be no doubt that subjects who reject organized religion are less prejudiced on the average than those who, in one way or another, accept it." (Adorno et. al., 1950, p. 209)

In the same study church attenders (those who claimed to attend 'regularly', 'often', or 'seldom') were very noticeably higher scoring in ethnocentrism. (There were no significant differences between the three types of attenders.) The author concludes, "Once again, it appears that those who reject religion have less ethnocentrism than those who seem to accept it." (Ibid. p. 213.) This conclusion is further supported by the fact that those who considered religion at least 'mildly important' scored significantly higher than those who did not. (Ibid. p. 217.) It should be noted that writing in the word 'none' after the question 'religion?' does in fact imply rejection at least to a greater extent than merely claiming some affiliation with no basis for doing so such as attendance, official membership, reverence, etc.... Yet both can and do imply low religiosity.

From these and similar sorts of results Allport and Ross (1967, p. 432) concluded, "A certain cognitive style permeates the thinking of many people in such a way that they are

indiscriminately pro-religious and, at the same time highly prejudiced." The import of these findings is, of course, dependent on the definition (given or assumed) of religiosity or religious behavior. Obviously, recalled attendance, claimed membership, or stated opinions are far from reliable indices of underlying attitudes. It is through the implicit measurement of these attitudes that the paradox is partially dissolved. In discussing its dissolution we shall also examine church differences.

We have seen that Catholics are more 'religious' than Protestants on the basis of much more comprehensive measures of religiosity than the above. Are they in fact more prejudiced and if so, does this affect the overall positive correlation between attendance and prejudice?

There is a positive correlation between prejudice and attendance. However, the relationship is curvilinear. Even though most attenders are more prejudiced than non-attenders, "a significant minority of them are less prejudiced." (Allport and Ross, 1967, p. 432) these authors argue:

It is the casual, irregular fringe members who are high in prejudice; their religious motivation is of the extrinsic order. It is the constant, devout, internalized members who are low in pre-

judice; their religious motivation is of the intrinsic order. (Loc. cit.)

In fact a number of studies have demonstrated the breakdown of the relationship (e.g. Parry, 1949; Allport, 1954). Attendance is much more highly encouraged by some churches than others. Thus, when studying just Protestants, Parry (1949) found that the relationship was reversed, attenders were less prejudiced than non-attenders.

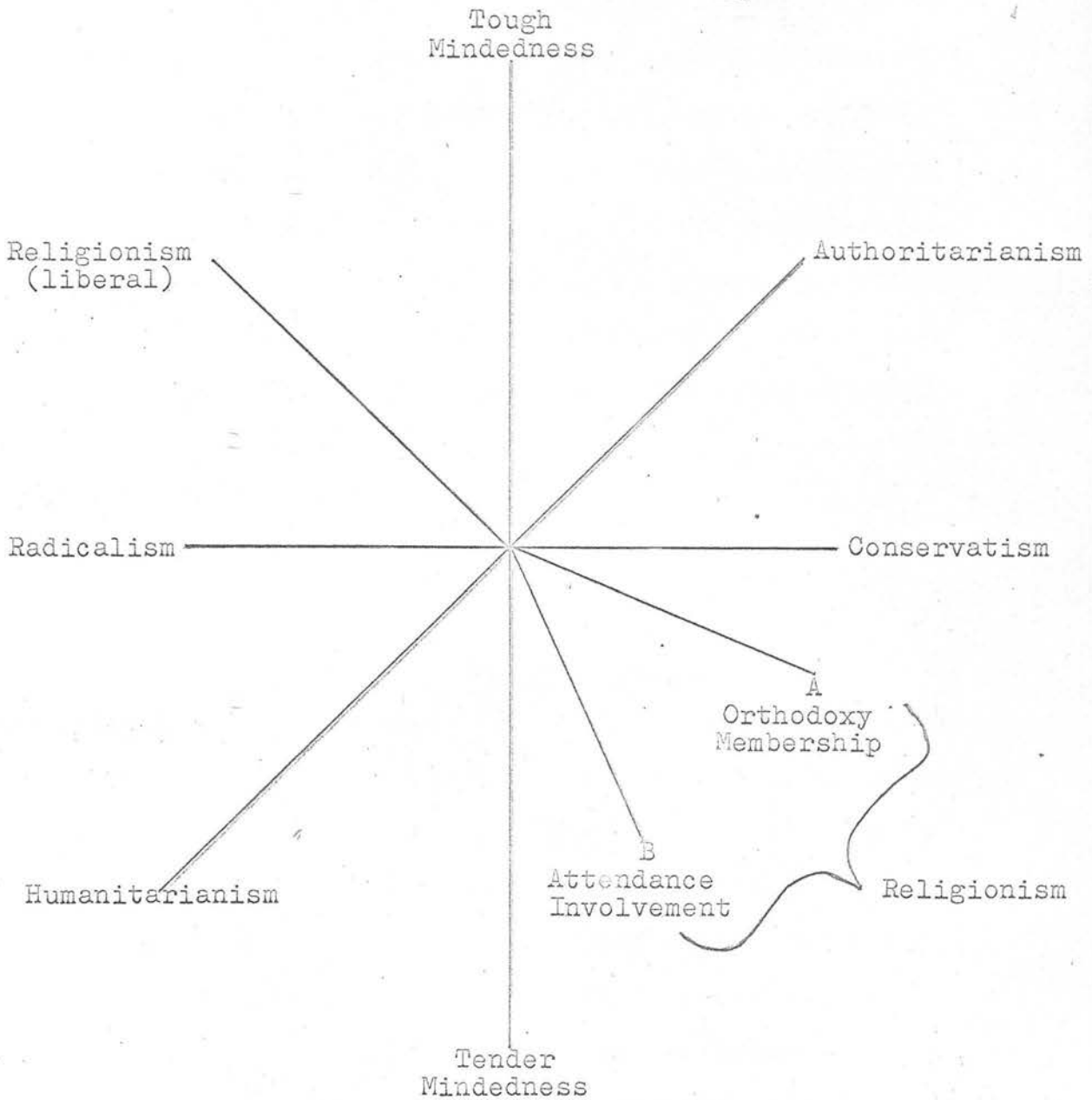
The overall positive correlation between attendance and prejudice is the result of a number of confounding factors: (a) religious people are more prejudiced than non-religious people, (b) the Roman Church has rather more stringent attendance requirements than most, and (c) Roman Catholics have usually been found to be more prejudiced than Protestants. (cf. Adorno et. al., 1950; Allport and Kramer, 1946.) These factors combine to produce an overall positive and misleading correlation between attendance and prejudice.

In conclusion then, people who claim membership, attend services regularly and/or have a favorable attitude towards religion are more prejudiced than those who disclaim or reject religion. However, the validity of any one or combi-

nation of these factors as a measure of genuine religious involvement or intrinsic motivation is questionable. Further, the differences between Catholics and the major Protestant denominations show Catholics to be more prejudiced. Contrary findings (cf. Argyle, 1958) are present in the literature though few. Data involving extrinsically and intrinsically motivated members of one church compared with their counterparts in another would, by more validly assessing involvement, cast considerable light on denominational differences. However, there are problems involved with even this sort of approach.

3. Authoritarianism. The Political-Economic Conservatism, Anti-Semitism and Ethnocentrism Scales are measures of explicit ideologies. Scores on these scales correlate at between .43 and .76. The F Scale (Implicit Anti-Democratic Trends) was designed to measure the basic personality mechanisms underlying the concomitance of these scales. As measures of explicit ideologies the PEC, A-S, and E Scales are direct assessors. As a measure of implicit personality trends the F Scale assesses more indirectly (i.e. without referring to that which it measures). Although it was designed to do so, the F Scale does not measure a pure factor or single trait.

Figure 1. Religionism A and B.



Ferguson (1944) discovered a factor very similar to F and another at right angles to it. (cf. Figure 1.) The first of these, Humanitarianism, represents the opposite pole of the same dimension as Authoritarianism. The second, Religionism, represents a religious dimension with orthodox conservative religious views at one pole and liberal religious views at the other (e.g. return to religion and make birth control illegal vs. make divorce easier, Sunday observance old-fashioned, and companionate marriage acceptable). These two factors were statistically independent. Eysenck (1944) also found two independent factors, Radicalism-Conservatism and Tough-Tender Mindedness. (cf. Figure 1.) In the discussion of his results Eysenck states, "when the results ... are compared with Ferguson's analysis, it will be found that agreement is striking with regard to the actual position of items but that his two main factors ... are rotated from R(adicalism) and T(ough-minded) through an angle of 45° ." (Eysenck, 1953, p. 233; cf. Argyle, 1958, p. 89.)

Argyle correctly concludes that, although both Eysenck and Ferguson maintain the independence of religionism and authoritarianism, they are in fact positively correlated. The evidence cited for this is the positive correlation between religiosity (religious conservatism) and Ethnocentrism. The case for the positive correlation between religionism and

and authoritarianism is further supported, according to Argyle, by the findings of Kirkpatrick (1949); namely a negative correlation of .24 between religionism and humanitarianism (the opposite of authoritarianism).

Argyle suggests that the problem is definitional and presents the following argument in support of his position:

If authoritarianism is measured in a way which makes it more like political conservatism, then there is a closer correlation with religion. If religionism is defined in a way which stresses orthodoxy of belief and church membership rather than church attendance, it will lie in the 'A' position ... and be associated with authoritarianism, political conservatism and prejudice. If religionism is defined by church attendance and other measures of genuine religious involvement, it will lie in position 'B', and may be associated with low race prejudice, liberal rather than conservative views in politics, and low scores on authoritarianism. Religionism A is stronger for Catholics and other religious conservatives, Religionism B for Unitarians, Jews, and other religious liberals. This fits in with the fact that Catholics are higher on authoritarianism than Protestants, and Protestants higher than Jews (...Lipset, 1953). (Ibid. p. 89.)

This argument would appear to be weak at several points. The criticisms discussed below are not of the conclusions reached but the argument leading to them.

a. The author states that orthodoxy of belief and church membership are applicable to the Roman Church while "church attendance and other measures of genuine religious involvement" are more particularly applicable to the major Protestant denominations (Argyle, 1958, p. 89). Whether true or false, this is inconsistent. Church attendance is a no more accurate measure of genuine religious involvement than membership or orthodoxy of belief. It is inconsistent with the previous statement that:

... it may be argued that the Catholic Church puts on greater pressure for sheer attendance than some other churches. There may be some people who simply observe the outward forms of religion, in order to keep up appearances or not to upset their relations, but who have no real religious beliefs or feelings. However, these people would not be expected to be active in more private kinds of worship such as saying prayers

(Argyle, 1958, p. 6.)

Furthermore, an example of the unreliability of church attendance as a measure of genuine involvement, has been discussed

in terms of racial prejudice. (cf. p.18.) The findings of Allport and Ross (1967) also contradict the contention that church attendance and other measures of "genuine religious involvement" are more applicable to Protestants than Catholics. These authors found that church attendance was not indicative of either intrinsic or extrinsic motivation in any simple sense. Finally, Allport et. al. (1948) reported that Catholics are not only more religious than Protestants on the basis of orthodoxy of belief and membership, but also on the basis of attendance and private prayer and worship. In short, there is nothing in the literature or at any rate nothing cited, to support the contention that attendance and/or genuine religious involvement are more characteristic of Jews and Protestants than of Catholics.

b. Given the validity of the contention that Roman Catholics are better defined by orthodoxy and membership than by attendance and genuine religious involvement, there is no evidence cited regarding attitudinal or motivational differences between Catholics and Protestants matched on any of the above indices of religious behavior. Are, for example, intrinsically motivated Catholics who attend services regularly more or less authoritarian than intrinsically motivated Protestants who attend services regularly?

c. How does one measure 'genuine religious involvement? Measuring attitudinal and/or motivational differences without directly touching on matters within the scope of many churches or without dealing with trivia would seem to present considerable difficulties. It is the business of religions to be concerned with the indirect aspects and non-trivial ramifications of what would appear to be most social phenomena (e.g. divorce, birth control, and religions themselves).

C. Conclusions. Given the evidence cited with respect to the empirically defined phenomenon of religion, there is a considerable body of research demonstrating the higher conservatism, ethnocentrism, and authoritarianism of religious as opposed to non-religious people. Catholics have been found to be more 'religious' than Protestants on most measures of religiosity. Although there are considerable problems involved in the interpretation of findings the great weight of evidence indicates that Roman Catholics as a group evidence considerably more authoritarianism than members of the major Protestant denominations. The validity of this conclusion is further supported by the findings of Fox (1965), Weima (1965), and Quin (1965) as well as indirect evidence such as conformity studies.

Motivationally matched samples, studied in terms of the measures discussed, would provide considerable clarification of the problems involved. The crucial questions are not whether attenders or non-attenders are more authoritarian but whether intrinsically motivated Catholics who attend regularly are more authoritarian than intrinsically motivated Protestants who attend regularly.

CHAPTER THREE : CONFORMITY

- I. INTRODUCTION
- II. THREE DISTINCTIONS
- III. FOUR PROTOTYPICAL GROUP PRESSURE SITUATIONS
- IV. A PARAMETER OF GENERALIZABILITY
- V. PRESTIGE SUGGESTION AND AUTHORITATIANISM

I. INTRODUCTION

A. Conformity as Interaction. Variations in amount of conformity are a function of the interaction between social and personality factors operating in a situation. It is this interaction that accounts for the majority of the variance in conformity behavior; not social or personality factors per se. (cf. Hunt, 1965.) Conformity is often viewed as either a dimension of personality (e.g. Barron, 1952) or the result of the social situation in which it occurs (e.g. Asch, 1956). The contention that conformity behavior is indicative of a personality dimension is supported by the fact that there is significant individual consistency in relative amount of conformity over a wide range of situations. (cf. Blake et. al., 1956.) Milgram offers the contrasting view that "given any social situation, the strength and direction of potential group influence is predetermined by existing conditions." He adds, "We need to examine the variety of field structures that typify social situations and the manner in which each controls the pattern of potential influence." (Milgram, 1965, p. 134.) It is the purpose of this chapter to consider some of the field structures and social aspects of situations in which conforming responses are elicited and to relate them to a particular dimension of personality, authoritarianism.

B. Two Kinds of Parameters. Before one can discuss the interaction of social and personality factors in a meaningful way, an attempt must be made to specify and control the parameters of the situation in which this interaction occurs. There are two classes of parameters involved: (1) methodologically controlled parameters and (2) parameters of generalizability.

1. Scientific methodology permits the repetition of experimental findings. This is accomplished by objectively measuring the effects of manipulating variables in controlled situations. Scientific procedures are applied to one class of parameters. The application of scientific methodology is independent of the relevance of the variables examined or the generality of the findings derived. A critical determinant of the relevance of a social scientific experiment is its generalizability to everyday analogues. This generalizability (viz. similarity to the everyday) is affected by another class of parameters.

2. Experimental social situations are, for practical purposes, always analogous to some type of everyday situation. However, this similarity is a matter of degree and the degree of equivalence is seldom systematically specified. Yet, from the standpoint of psychological science this generalizability from the laboratory to the everyday is as significant as sci-

entific methodology.

In terms of a group pressure experiment there is always the possibility of constructing a social situation which is, to a large degree, artificial and still validly measuring social and personality factors interacting therein. The less the similarity of an experimental situation to its everyday analogue, the greater the probability of discovering factors which, while operating in both, do so for different reasons. (cf. p.66 .)

The scientific control of a situation is possible without specifying the parameters affecting its generalizability. We do not have a language for the systematic specification of the degree of similarity between laboratory and everyday social situations. Before one can meaningfully discuss the interaction between social and personality factors in a situation some attempt must be made to specify these parameters. A possible means of doing so is discussed herein.

C. Outline. This chapter is divided into four sections. The first of these deals with the definition of conformity and in it three successively more specific distinctions are made:

social influence vs. group pressure, acquiescence vs. conventionality, and movement vs. congruence. In the second section four experimental situations (Sherif, Asch, Olmstead-Blake, and Crutchfield) which comprise a central line of research are discussed and compared. The third section deals with a possible means of qualitatively and quantitatively specifying one kind of parameter affecting the generalizability of group pressure situations. The final section attempts an application of this scheme to the interaction of prestige suggestion and authoritarianism.

II. THREE DISTINCTIONS.

A. Group Pressure vs. Social Influence. The first distinction to be made in defining the general area of conformity behavior is between group pressure and social influence. "The phenomena of group pressure are part of the more inclusive operations of social influence which include teaching and learning, or the imparting of ideas and skills, the generating of enthusiasm and purpose, and the exercise of outright coercion." (Asch, 1961, p. 156.) Social influence subsumes group pressure and the experimental study of conformity has been the study of group pressure, with few exceptions, (cf. Beloff, 1958; Gruen, 1961).

B. Acquiescence vs. Conventionality. The second distinction provides a conceptual bridge between the effects of group pressure (acquiescence) and the effects of social influence in general (conventionality). "In current psychological literature, the term conformity is applied to two distinguishable phenomena, which may be termed acquiescence and conventionality." (Beloff, 1958, p. 99.) According to Hollander and Willis (1967) this statement is no less pertinent now than it was then. We shall adopt these terms at the outset.

We shall adopt these terms at the outset. Conformity will be abandoned except as a general referent of group pressure. The terms are conceptually defined as follows:

Acquiescence: "...refers to the agreement with expressed group opinion in a particular experimental situation involving pressure from others." (Loc. cit.)

Conventionality: "...the concurrence with the tenets, attitudes and mores of a subject's culture or subculture." (Loc. cit.)

The relationship of the two is also defined. "Conventionality is here viewed as the summated end product of past specific or piecemeal acquiescences with cultural norms." (Loc. cit.)

The distinction between acquiescence and conventionality is significant from at least three points of view. (1) It provides a conceptual bridge between opinion change resulting from group pressure and the broader effects of social influence. (2) It formalizes the relationship between two previously undifferentiated phenomena resulting from group pressure. (3) It provides the basis of the third distinction (discussed below) by calling attention to the fact that a lack of opinion change in response to group pressure need imply neither 'nonconformity' nor 'independence'.

C. Movement vs. Congruence. Hollander and Willis (1967) distinguished movement from congruence for essentially the same reason. Beloff (1958) differentiated acquiescence and conventionality. "Current research is characterized by a nearly universal failure to distinguish between two basically different descriptive criteria of conformity - nonconformity, here termed congruence and movement." (Hollander and Willis, 1967, p. 62.) These authors give the following definitions:

Conformity: "...behavior intended to fulfill normative group expectancies as presently perceived by the individual." (Ibid. p. 64.)

Movement Conformity: "The movement criterion dictates the measurement of conformity (positive or negative) in terms of a change in response resulting in a greater or lesser degree of congruence." (Loc. cit.)

Congruence Conformity: "...the congruence criteria requires that conformity (or nonconformity) be measured in terms of the extent of agreement between a given response and the normative ideal." (Loc. cit.)

Movement in Relation to Congruence: "...congruence conformity and potential for movement conformity are actually perfectly and inversely related!" (Ibid. p. 63.)

Movement and congruence are analogues of acquiescence and conventionality. They are taken here to apply at a more specific level since they are conceptualized in terms of normative group expectancies as opposed to cultural norms. The principal weakness of the movement congruence distinction stems from this conceptual specificity. Because conformity is defined in terms of a group norm, an individual who responds to group pressure in a manner evidencing no congruence with or movement in relation to the group norm is termed 'independent.' In fact the individual may be responding conventionally while the group is responding unconventionally (viz. cultural norms). This is, more often than not, precisely the case in experimental studies of conformity, particularly those studies employing factually anchored stimuli.

The inverse relationship of movement and congruence further limits the applicability of the distinction to situations using objective stimuli (i.e. discrimination judgments) to elicit conforming responses. In these situations congruence is operationally defined as the degree of discrepancy between the group norm and the subject's estimate. The greater this discrepancy the less the congruence. If movement and congruence are inversely related ^e than the greater this discrepancy, the greater the potential for movement conformity. In fact the converse of this statement has had

a long history of validation beginning with Asch's (1947) tentative conclusion, "The degree of independence increases with the distance of the majority from correctness." (Ibid. p. 182.) Summarizing the evidence for this contention, Campbell (1961, p. 117) states, "The larger the contrast in a discrimination judgment the less conformity will occur." (cf. Asch, 1948; Asch, 1956; Crutchfield, 1955; Blake, Helson & Mouton, 1956; Blake and Mouton, 1961.)

In situations employing objective stimuli to elicit factually anchored responses to group pressure in the form of a spurious group norm which is arbitrarily manipulated, the distinction between movement and congruence and their inverse relationship are inapplicable. In a situation such as this at least three kinds of forces act on the subjects' responses: his perceptions, the apparent group perceptions, and external factors (e.g. role of subject in experiment, previous performance, suspicion, etc...). As the group norm is perceived to be more and more spurious (cf. Stricker et. al., 1967), the force of the group (social anchorage of response) becomes less and less. Hence the response of the subject becomes more and more independent of the group.

As the characteristics of a given situation cause the individual to rely more and more on the group as a referent

of his behavior the movement-congruence distinction becomes more and more significant.

...conformity behavior increases when it is necessary for an individual to rely more heavily on the responses of others in making his own re-adjustment. Attitudes are more easily shifted than are reactions to factual or logical items, probably because attitudes are more social in character. Increasing the degree of difficulty of items, reducing external cues which provide objective information ... all serve to increase the effectiveness of conformity pressures in shifting a person's response. (Blake and Mouton, 1961, p. 11.)

Movement (acquiescence) in socially anchored situations is most meaningfully interpreted in terms of congruence. Depending on the amount of congruence, movement or the lack of movement can be attributed to discrepant, if not contradictory, etiologies. An individual evidencing no movement may have done so because he was not influenced by the group (no congruence) or because he precisely anticipated the group norm in the first place (maximal congruence). Similarly, an individual may exhibit a given amount of movement towards a group norm for one of two quite distinct reasons - depending on an estimate of congruence. He may have so closely anticipated the group norm that the potential for movement towards

it was highly limited (high congruence) or he may have originally held an opinion so discrepant with the group norm that the same amount of movement as in the former case is of little import (low congruence).

Clearly, when the distinction between movement conformity and congruence conformity is applicable, the question asked is movement, acquiescence or conformity to what? Conceptually the answer is the individual's perception of present normative expectancies. Operationally the experimenter is required to ascertain the degree of discrepancy between the individual's position and the average or model response of the group. Movement, acquiescence or conformity to social pressure is maximally meaningful when interpreted in terms of congruence. The relative values of movement conformity and congruence conformity are the best estimate of acquiescence. In everyday situations group pressures influence individuals to acquiesce with cultural norms. The summation of these acquiescence with cultural norms is conventionality and the latter is indicative of the broadest effects of social influence.

D. Summary. The distinction between social influence and group pressure serves to differentiate a particular kind

of conformity behavior, resulting from group pressure, from the broader concept of social influence. Acquiescence and conventionality are terms which apply within the concept of group pressure - at least operationally. Conceptually these terms can and do apply to the whole range of behaviors in response to social pressure since they were defined in terms of cultural norms. The movement-congruence distinction is maximally specific in that it principally applies to group pressure situations in which acquiescence is the result of the individual's perception of the present normative expectancies of the group. Movement and congruence are important concepts for the measurement of acquiescent behavior in socially anchored situations.

III. FOUR PROTOTYPICAL GROUP PRESSURE SITUATIONS.

A. Introduction. Experimental situations in which acquiescent responses are observed are meant to be generalizable to analogous everyday situations. The extent of this generalizability is primarily dependent upon the degree of similarity between the essentials of each situation. The ultimate concern herein is with the broadest effects of social influence to acquiesce with cultural norms (i.e. conventionality in terms ^{of} religion and nationality). The critical induction from the laboratory effects of pressure to acquiescence and conventionality is from the experimental to the everyday situation.

In this section four prototypical situations from which some fifty percent of all experimental studies of acquiescence have been derived (cf. Blake and Mouton, 1961) are considered in relation to each other on the one hand and to their everyday analogues on the other. In the next, an attempt is made to systematically specify one kind of parameter which provides a basis for this sort of comparison.

The studies discussed below may be termed an evolutionary line for three reasons: (1) they do follow more or less directly from one another, (2) they have generated and/or

are representative of a large part of the literature of 'conformity' (i.e. most of the literature of experimental acquiescence), and (3) they do not necessarily represent improvement in an overall sense. The immediate precursor of this branch of research, if not the instigator was F.H. Allport. His work with the 'coworking group' (1924) and the 'J curve' (1934) suggested that there might be, or is, a need to agree or establish a norm (Brown, 1965, p. 669).

B. The Situations. The first study, that of Sherif (1936; 1937), made use of the autokinetic effect as the tool for studying the process of norm formation. This phenomenon was first experienced by astronomers studying isolated stars which seemed to move about somewhat erratically over distances indicative of impossible velocities. It was first reported by von Humboldt in 1850 and given its name by Aubert in 1887 when, presumably, its illusory nature was first comprehended. Many explanations have been proffered for its occurrence including lack of spatial referents with which to localize the light, size, eye movements, head movements, illumination of the visual field and suggestion.



The phenomenon is relatively simple to evoke in the laboratory and Sherif did so using a darkened room containing a box with an aperture through which the stimulus was presented. Upon looking towards this box the S would ultimately see a pin-point of light and be asked to estimate the distance it moved. (In addition to the apparatus mentioned Ss depressed a button attached to a timer while the light was perceived to be in motion; cf. p.55.) There were a number of such trials.

Sherif divided his subjects into two groups and each group followed two separate experimental procedures. One group performed the observations under the above conditions (i.e. individually) and then the same procedure was repeated in groups of two or three - in such a manner that each member of the group heard the estimates of all the others either before or after making his own. The order of response was random. The second group of subjects performed the observations under exactly the same two sets of conditions but in reverse order. That is, they made their observations in a group first and then individually. It was in the comparison of the two groups that the essential contrast was revealed.

This contrast was as follows. Those Ss who first performed under the 'alone' conditions each established a unique

range of responses and a unique mean response. When these Ss then performed under the 'group' conditions their individual means and ranges converged and a range and mean peculiar to the group was established. Conversely, those Ss who first performed under the 'group' conditions did not establish individually unique response distributions. Each group of Ss established a characteristic response distribution. However, when these 'group' Ss were then placed in the 'alone' conditions, rather than generating individual response distributions, each S responded within the range and about the mean previously established by the group (Sherif: 1936, 1937, 1947, 1961).

At this point it becomes relatively easy to make the conceptual leap from the apparent power of the group's influence in the formation of norms to the arbitrary manipulation of individual responses by E and thus to the application of social pressure within the situation. This was accomplished by Sherif and later by Asch (1951), Blake and Brehm (1954), and Crutchfield (1955). As a matter of fact, it seems clear that, given certain minimal conditions, acquiescent responses could and were produced by anyone who tried. (cf. Asch, 1961, p. 147.) Perhaps it was for this reason that the critical determinant of the value of a group pressure experiment became, not the production of yielding responses, but to a large

extent the speed and efficiency with which this could be done.

"Basic to the current approach has been the axiom that group pressures characteristically induce psychological changes arbitrarily in far reaching disregard of the material properties of the given conditions" (Asch, 1958). Applying this statement to the Sherif experiment one sees that two important questions are raised.

(1) Is the situation justifiably similar to the everyday or so unique as to invalidate social implications?

(2) Is it social pressure which causes Ss to conform or the ambiguity and lack of structure inherent in the situation? The questions are rhetorical and the statement from which they are derived apply to the Sherif situation as it was interpreted. Sherif (1958, p. 238) clearly noted the fact that his experiment was neither everyday nor representative of a pressing social situation. Rather, a new situation flexible enough to allow prestige, suggestion, and other group influences to enter into it. It is interesting to note that in applying Asch's distinction between social influence and group pressure to the Sherif situation, one sees that it was conceived of as an experiment exploring group influence. Only later was it used as an experiment in group pressure.

As far as experimental acquiescence is concerned, the outstanding objection to the Sherif experiment was its lack of objectivity. The autokinetic phenomenon is illusory at best. At worst there is evidence to suggest that it is not even that.. "The more the S is led to believe that the light is going to do something (move) the more apt he is to perceive the effect. The AE is not readily perceived by most Ss when movement is not suggested. Even when movement is suggested, some Ss do not perceive the AE" (Cautela and Vitro, 1964). (cf. Corteen, 1968) The exact nature of the phenomenon is not clear. What is clear is the difficulty encountered when attempting to objectively quantify results obtained through its use.

Asch designed his classic experiment in consideration of the above. He sought to examine the objective effects of social pressure to acquiesce when this pressure was perceived to be contrary to fact. He did so by using objective stimuli. His procedure was as follows. A group of five Ss were shown a line of unspecified length called the standard line. Along side of this line appeared three other lines lettered a, b, c and called the comparison lines. All Ss knew that on each trial one of the comparison lines was exactly the same length

as the standard line. After being given time to make their decisions Ss called them out in the order in which they were seated. On certain trials, the 'critical' trials, the first four Ss, who were acting in collusion with the experimenter, all chose the same incorrect line (i.e. a unanimous majority against a minority of one, the prototypical Asch situation). The effect was observed in the response of the fifth S to reply; the naive and only experimental subject.

The most obvious inadequacy of the Asch experiment, from a practical standpoint, is its dependence upon the pre-briefing and payment of 'stooges'. This clearly eliminates the possibilities of (a) testing subjects simultaneously, (b) testing every member of a given group with other members of the group as the majority and (c) gathering data for large groups in a short period of time. Blake and Brehm (1954) in one study and Crutchfield (1955) in another circumvented these problems through the use of simulated groups. This is not the only advantage of these situations nor did they introduce only improvement.

In the Blake experiment Ss met outside and were escorted into five separate booths, each equipped with a microphone

and headset. Through the latter each S heard a number of clicks and then estimates of that number from the other four Ss. At this point each S made his own estimate. Actually, each S heard the same recording of clicks and the same pre-taped estimates of their number. Each thought he was the fifth to respond. In this manner all five Ss were treated simultaneously.

Crutchfield's contribution was in one sense similar to that of Blake and Brehm. Both designed situations eliminating the need of 'stooges' through the use of simulated groups and both raise by a factor of about five the speed with which data could be gathered. In the Crutchfield (1955) study each S entered a booth also. Each booth contained a display of lights and switches which allegedly gave the responses of the other Ss. Of course, they did not. In spite of the fact that the fronts of the booths were open and all Ss viewed the exact same stimulus on a given trial, E controlled the responses of each S - at least the responses each S saw and attributed to the other Ss.

We have seen the immediate rationale for the development of each of these four experiments. The Asch introduced objective stimuli, the Blake and Brehm as well as the Crutchfield, speed and efficiency in the process of collecting data. In these general terms they represent successive improvements. However, if one subjects each to the same criteria of evaluation the picture is not so clear. None incorporates the advantages of all. For example, in terms of preparing materials, the Asch situation is by far the most simple and elegant. The basis of the particular criterion with which these four experiments will be compared, is the optimal balance between situational reality or generalizability on the one hand and scientific objectivity on the other. This balance is here viewed as central to the evaluation and interpretation of any study of acquiescence in the laboratory or ^{to a} consideration of its implications for everyday behavior. (cf. p.65ff.)

C. Critique and Comparison. In terms of scientifically objective measurement the Asch experiment, through the use of objectively quantifiable stimuli, introduced the possibility of maximizing scientific validity and subsequent studies have drawn upon it as a paradigm. The Crutchfield apparatus permits any number of variations ranging from logical state-

ments, through the use of lines^{as in the Asch} to judgments of the areas enclosed by geometric figures. The problem is then, optimizing the balance between objective quantification and situational reality. The following analysis attempts to examine these four studies in terms of this balance and to thus indicate its implications and significance for the experimental study of acquiescence.

In order to evaluate these experiments in terms of their similarity to the everyday we shall compare the four basic elements of the Asch situation (cf. Asch, 1958) with the Sherif. We shall then return to the Blake and Crutchfield studies which are, with a few important exceptions, essentially similar to the Asch.

1. In the Asch situation there is a confrontation of two contradictory and irreconcilable forces: the evidence of the senses and the unanimous opinion of the majority. This is clearly not the case in the Sherif. The forces are not irreconcilable but tractable, not contradictory but divergent. The forces operating in the Sherif situation, the evidence of the senses and the opinion of the majority, cannot be contradictory unless autokinesis is absent in only

one subject. Furthermore this is unlikely to occur on any but possibly the first trial. The forces are reconcileable in the sense that in the Sherif situation an S can always agree or disagree in degrees. This is not so in the Asch; one either agrees with the majority, disagrees by choosing the correct comparison line, or 'anti-conforms' by choosing the other wrong line. (There is the possibility that S could choose a line intermediate between the correct and majority choice in the Asch but this was only the case in two out of twelve critical trials in the original Asch experiment.)

In the everyday situation, while one often deals with contradictory or irreconcilable opinions, in the great majority of instances they are not perceived to be simultaneously contradictory and irreconcilable. Only when they are is one forced to make an all or none statement (if any at all). Thus it seems that in this respect the Asch situation is less everyday than the Sherif.

(2) Both forces are part of the immediate situation; they are concrete aspects of the Asch situation. Whatever the nature of the forces operating in the Sherif experiment they are not all concretely present. If they were subjects might be expected to agree with the majority response or disagree with it but not to agree in degrees. As noted (cf.p.55) a number of factors would appear to be extraneous to the Sherif situation, including instructions. In terms of scientific validity then, the Asch is the more controlled experiment, but in terms of our concern of the moment (situational reality) the Sherif is the more justifiable. One doesn't report impressions of an automobile accident, for example, with everything controlled except the evidence of the senses and the opinions of other witnesses. The report is dependent upon a number of other things (extraneous factors), including how and which questions are asked.

(3) In the Asch test Ss must take a public stand vis a vis the group. This is true of the Sherif experiment also. However, the implications of this stand are quite different. In the Asch one is presented with the unfamiliar situation of

a forced all or none response and the effect of being forced to take a public stand is much greater. Evidence for the physiological effects of the Asch situation on a critical trial is offered by Bogdonoff (1961). While Ss were engaged in critical trials the author found that an index of central nervous system arousal, level of plasma-free fatty acids, went up. This level was reduced for yielders but remained high in non-yielders. (cf. Brown, 1965, p. 670.) It has been suggested that experimental acquiescence is in fact a defense mechanism which permits one to reduce anxiety and thus reduce genuine group influence (Hoffman, 1956). This sort of effect is not likely to occur in the Sherif situation unless (a) the majority is unanimous and (b) a subject does not experience the illusion. Therefore, in the Asch situation the effect of a public stand (100% acquiescence or non-acquiescence) is much greater than in the Sherif where Ss are able to respond in degrees. Furthermore 100% acquiescence is not characteristic of many everyday situations. One usually acquiesces in degrees.

(4) The nature of the Asch situation makes it self contained. This is probably true and it is precisely for this reason that a consideration of congruence in an Asch-type

situation is problematical. (cf. p.46F.) Movement for a particular trial is either zero or maximum and can only be meaningfully discussed in terms of a series of trials. Congruence is so precisely defined and arbitrarily manipulated that it too is all or none. Only when a situation is more flexible, as the Sherif, can congruence achieve meaning. The more flexible and the more similar to the everyday, the more likely it is that responses will be socially anchored and the more likely it is that acquiescence will best be viewed in terms of movement and congruence. Because the Sherif situation is less self-contained and more flexible it would seem to be more similar to the everyday. However, the gulf between an Asch situation and everyday acquiescence is sufficiently large to permit a considerable range of artificial situations including the Sherif.

In terms of social behavior it follows from this analysis that both the Sherif and Asch experiments and indeed any controlled experiment is not directly comparable to everyday social interaction. They represent what happens if one ~~extrapolates~~ ^{Abstracts} certain essentials from social situations, generates them in the laboratory and observes the effects. Nevertheless, although the experimental aspects of the Asch

study are highly favorable, it seems that the Sherif study is a closer approximation of everyday situations. There are not that many situations in which one is forced to recognize two contradictory and irreconcilable facts, forced to make a public, all or none decision about them and offered no means of escape from doing so.

The above is a statement of the definition of the Asch situation. Experimentally it is truly classic but in terms of its social implications it is vulnerable. It represents an easily quantifiable measure of the amount of yielding occurring in an essentially artificial situation in which social pressure is applied. The suggestion is not that this ^{artificiality} can be avoided, then or now, but this does not imply that the situation cannot be improved. The Blake and Crutchfield modifications represent improvements - other than speed in data gathering. The Blake study illustrates another improvement characteristic of both. The forces operating are the evidence of the senses (numbers of clicks heard) and the majority estimate. They are not contradictory but divergent. They are not irreconcilable but amenable. Ss' responses are not of an all or none nature but a matter of degree. Both of these studies are more similar to the Sherif and the everyday in this respect than is the Asch.

The Crutchfield experiment incorporates another significant improvement absent in all of the others. The E is not limited to lines, clicks, or the autokinetic effect but can use any of these plus a variety of other stimuli including statements of opinion. This then, represents the possibility of more easily justified approximations of everyday issues. Nevertheless the physical setting in which social pressure is brought to bear on these issues is, truly unique for most Ss.

Both the Blake and Crutchfield modifications of the Asch situation are experimentally superior to the Asch itself. They are more efficient and more controlled. On the other hand they have made these gains at the expense of situational reality. Face to face interaction is non-existent. This line has progressed or proceeded all the way from two or three people sitting around a table and coming to some sort of compromise agreement- over an illusory phenomenon, to five or six people isolated in booths and communicating with each other by buttons; attempting to decide their degree of agreement with each other about statements of opinion.

In summary, the Sherif experiment established a balance in favor of situational reality at the expense of objectivity. Asch altered this balance and removed the experiment further from the everyday while increasing objectivity. Crutchfield

and Blake solved the problem of data gathering but in so doing brought the whole experiment into the deepest recesses of the Psychology laboratory.

D. Conclusion. The consideration of these four experiments with respect to scientifically objective measurement and situational reality is meant to be indicative of (1) both their inherent and avoidable limitations, (2) a central problem in generalizing from results obtained in similar manners and (3) more or less standard problems in any study of social influence.

There is, of course, a certain amount of intrinsic dissimilarity between experimental and everyday acquiescence. The source of this disparity is the requirement of objective measurement which in turn necessitates scientific control usually in the form of self-containment. This self-containment is absent in most social situations; the exceptions being the most elemental social encounters. Given the fact that conformity experiments are designed to say something about everyday acquiescence, conventionality, and social influence in general, objective measurement and situational reality are of at least equal import. Accuracy in the

specification, control, and measurement of variables is of significance only in so far as the results obtained are generalizable to real situations.

It would not be defensible to maintain no concomitance between experimental acquiescence and conventionality, "The Organization Man," or "other-directedness". On the other hand, the less real an experimental situation the greater the probability that variables operating in the laboratory are of little or no significance in the everyday. Furthermore, the greater the dissimilarity between the two situations, the greater the likelihood that an understanding of the variables which are common to both will be hindered. For example, there is evidence to suggest that intelligence is positively related to experimental acquiescence (cf. Blake and Mouton, 1958; Crutchfield, 1955). Assuming that this is a factor in everyday acquiescence one is faced with a problem. Is intelligence producing nonconformity in the laboratory for the same reason it produces nonconformity in the everyday? In the laboratory it could well be that intelligence is a very important factor in the arousal of suspicion. In the everyday it could well be an important factor in the recognition and estimation of 'idiosyncrasy credit' (Hollander, 1960). In both cases intelligence would be positively related to nonconformity.

IV. A PARAMETER OF GENERALIZABILITY.

A. Introduction. In the preceding section four experimental situations were considered in relation to each other and to their general everyday analogue. The basis of these comparisons were the salient characteristics of one of those situations. Three things might be noted with regard to this sort of comparison. (1) Each situation has salient characteristics different from those of the others. (2) At best the situations might be arranged on an arbitrary scale when compared in this way with the everyday, but their order would be partially determined by the basis of comparison. (3) Comparing the essential aspects of an artificial situation with the corresponding aspects of everyday situations is, in a sense working backwards. It is the essential aspects of a particular kind of everyday situation which should be compared with the corresponding (or absent) characteristics of the experimental situation. The salient characteristics of everyday acquiescence, the parameters of generalizability, should be specified first and situations compared on the basis of these.

The necessity of achieving a balance between scientific objectivity and situational reality or generalizability has also been discussed. Clearly, some sort of systematic and

objective estimate of situational reality is required before this balance may be properly assessed. The parameters which are specified and controlled to insure scientific objectivity are not necessarily the same as those affecting the generalizability of a situation. In this section a single parameter of everyday acquiescence is explicated. A consideration of "Three Processes of Social Influence" (Kelman, 1963) is presented. In addition, the utility of this scheme as a means of qualitatively and quantitatively specifying an aspect of the generalizability of a given experimental situation in a systematic way is also discussed and applied to the situations discussed in the preceding section.

B. Definitions and Conditions. Compliance, identification and internalization are qualitatively distinguishable processes which can and usually do operate simultaneously within the individual exposed to group pressure. They are separable on the basis of the antecedent and consequent conditions for the occurrence of each. We shall begin with the definition of these processes and then turn to a consideration of the conditions of occurrence and continuance of each (after Kelman, 1963).

Compliance may be said to occur when an individual acquiesces to social pressure with the object of achieving a favorable response from the individual or group to whom he acquiesces.

Identification is the process whereby an individual acquiesces in order to establish or maintain a relationship which is self-defining. According to the author, a self-defining relationship is, "A role relationship that forms a part of the person's self image." (Kelman, 1963, p. 456.) A role relationship can be either classical (i.e. direct imitation) or reciprocal (i.e. simultaneously definitive for both parties as teacher student or doctor-patient).

Internalization is the process whereby an individual acquiesces because this behavior is congruent with his value system. In this case agreeing with the group is not a response to pressure from the group.

The answer to a previous question, congruence to what? provides a means of conceptually differentiating these processes. Internalization is distinguishable on the basis of the fact that acquiescence to the influencing agent is dependent on the content of the stimulus to which the individual responds. Movement is dependent on the congruence of a particular response and the individual's value system. (If the information content of the stimulus relates to the individu-

al's value system then agreeing with the majority is not in fact acquiescence to group pressure. Internalized responses are consistent in as much as values and individual perception of information content are consistent. (That is, they are not necessarily consistent in a 'rational' way.)

Identification is distinguishable on the basis of the fact that acquiescence to the influencing agent is determined by the individual's perception of the role requirements of a particular situation. A particular response resulting from identification will occur whenever the individual perceives the same role requirements in a particular situation whether the influencing agent is present or not. Movement in this case is dependent on the congruence of a particular behavior and the individual's perception of role requirements of the situation.

Compliance disappears in the absence of the influencing agent. Movement is entirely dependent on the congruence of a particular behavior and the modal response of the group (i.e. the response of the influencing agent).

The antecedent conditions for the occurrence of each of these processes are differentiated in terms of (1) the basis of their importance, (2) the source of their power, and (3) the manner in which they become prepotent.

Compliance is important when there is concern for the social effects of a particular response. In this case the power of the influencing agent stems from his or their control of the means by which a particular social effect can be realized. The compliant response becomes prepotent when there is a limitation of choice (e.g. two contradictory and irreconcilable forces).

Identification is important when there is concern with the social anchorage of a response. The power of the influencing agent in this case stems from his or their attractiveness. The identificatory response becomes prepotent when a situation causes the individual to perceive role requirements as the salient characteristic.

The process of internalization derives its importance from the concern of the individual with the congruence of his values and his behavior. It's power is dependent upon the credibility of the influencing agent. "An agent possesses credibility if his statements are considered truthful and

valid, and hence worthy of serious consideration." (Kelman, 1963, p. 460.) Prepotency occurs, in this case, when there is a reorganization of the individual's means-end framework--when new means are perceived of achieving the same or a new end.

Given the above antecedent conditions, compliance, identification and/or internalization will be consequent upon (1) conditions of performance, (2) conditions of change or extinction and (3) the type of behavior system in which the response is imbedded.

Compliance will occur under conditions of surveillance, cease or change with altered perception of the conditions of achieving social reward, and is imbedded in a system of external demands that characterize a particular situation.

Identification is consequent upon the relationship of the influencing agent to the individual, and will cease or change when the conditions for satisfying self-defining relationships are perceived differently. This process is imbedded in the expectations defining a specific role.

Internalization will occur when the issues involved are relevant to values, and will cease or change with changes in the individual's perception of the conditions for maximizing the congruence between his values and behavior. This process is then, imbedded in the individual's value system.

C. Application. Compliance, identification, and internalization are three distinguishable processes of social influence. As such one would expect them to apply to group pressure, one kind of social influence. We have seen one problem in studying group pressure to be that of achieving an optimal balance between scientific control and situational reality. An argument for their equal import was also put forth. Carrying that argument a step forward one notes that the means for estimating or insuring the objectivity of an experimental situation are relatively straightforward. One controls the relevant variables, manipulates independent variables, and observes, estimates, or measures the effects on dependent variables. The question is how does one estimate or insure similarity between the experimental situation and its everyday analogue? The suggestion is that the above processes might provide a means of systematically specifying the degree of similarity of one kind of parameter affecting the

generalizability of a laboratory situation.

Obviously the number of kinds of social situations involving group pressure are virtually infinite. A start towards the specification of the generalizability of experimental situations has been made through the manipulation and interrelation of a large number of variables. The conceptual framework of the above processes provides a means of integrating some of these variables within one dimension affecting the degree of similarity between experimental and everyday situations.

Kelman (1963, p. 458-459) provides the basis for this suggestion.

It should be stressed that the three processes are not mutually exclusive. While they have been defined in terms of pure cases, they do not generally occur in pure form in real-life situations. The examples that have been given are, at best, situations in which a particular process predominates and determines the central features of the interaction.

Accepting this statement as postulatory one sees that the more similar a particular experimental situation is to an analogous everyday situation for a particular individual,

the more likely it is that these three processes are occurring simultaneously. A systematic experimental application of this scheme to laboratory situations provides a means of qualitatively and to some extent quantitatively specifying the similarity of that situation to its everyday analogue on this dimension.

Consider the prototypical Asch situation. Applying this scheme it might be classified as producing compliant and identificatory behavior in most individuals. The relative amounts of each could be estimated for each subject and manipulated on different administrations. The means of arriving at the specifics of this classification are relatively straightforward.

Unless there is perceptual distortion, acquiescence in the Asch situation cannot reflect the process of internalization. Agreeing with the majority is the result of social pressure; not of maintaining congruence between values and behavior. For practical purposes individuals are 100 percent accurate when social pressure is absent. The acquiescent individual in the Asch situation is evidencing identification and/or compliance. The relative amounts could be determined by presenting the identical situation with the exception that individuals enter their opinions on a ballot or respond in

private by some other means. The extent of the acquiescence persisting under these conditions could be attributed to identificatory processes and that disappearing to compliant processes. If the individual responds privately and the group has no opportunity to know his response, then the responses which evidence acquiescence cannot, by definition be due to compliance. If the influencing agent does not know the response of the influenced, the latter cannot achieve social effects based on his response.

The Asch situation is principally dissimilar to an everyday group pressure situation in that acquiescence to the group norm cannot occur as the result of a concern with the congruence between values and behavior. The stimulus is irrelevant to values. This has been a traditional criticism of all situations employing objective stimuli. Similarly, the amount of acquiescent behavior exhibited in this sort of situation has been noted to be a function of public or private response. (cf. Blake and Mouton, 1961)

The Asch situation was considered here (1) to demonstrate the basic approach applied below to more complex situations, (2) to indicate a means of integrating a number of variables affecting one characteristic of all group pressure situations, (3) to suggest the value of these means as a tool for asses-

sing individual differences on a much more specific level than amount of acquiescence, and (4) in connection with individual differences, to contrast the Asch with situations yielding similar amounts of acquiescence for different reasons.

Consider the Olmstead and Blake or Crutchfield simulated group situations in terms of these points. With regard to amount of acquiescence, there is no difference between simulated and face to face situations (Olmstead and Blake, 1955). The simulated group is clearly less similar to the everyday than the face to face group. On the basis of these facts it was previously argued (cf. pp. 66, 40) that similar variables might be operating in the two situations for dissimilar reasons. It was further argued that, depending ofⁿ the extent of the dissimilarity between the experimental and the everyday (or between two experimental situations), the probability of of this occurring increased or decreased. In this case the variable is movement to the group norm.

Neither the Asch nor the Olmstead-Blake as described permits acquiescence to occur as the result of anything but group pressure. There is no opportunity for the occurrence of internalized acquiescence in either (as is the case in everyday group pressure situations). The difference between the Asch and the simulated group can be clearly seen by comparing the process of identification in each. The opportunity

for identification in the simulated group situations is minimal. Subjects are physically isolated, unable to observe the effects of their responses on each other, and so on. The viability of this contention could be empirically determined by manipulating the conditions of response from private to public in the two situations. In terms of the everyday, while the Asch permits the occurrence of compliance and identification, the Blake basically permits only compliance. The variable is always the same - movement to the group norm - and there is no difference in the amount of this variable occurring in the Asch and Blake situations. Yet, the reasons for its occurrence (the processes leading to this movement) are different.

The Sherif situation is primarily different from the Asch and the others because there is opportunity for subjects to respond in a manner reflecting internalization; subjects can report what is actually "perceived" because this behavior is congruent with values and still acquiesce to the group norm. Quantification is difficult in this case but on a qualitative basis it would appear that the Sherif situation is more similar to the everyday than any of those discussed on this dimension. Each of the three processes has the opportunity of occurring in any subject.

The problem is somewhat more complicated when analysing what occurs in a situation such as the Crutchfield with statements of opinion as stimuli. However, with slight modifications in administration it is quite easily interpretable and might be done in the following manner. (1) Word opinions about a given topic positively and negatively (i.e. in a manner such that subjects have the opportunity to acquiesce and thus express agreement; and to acquiesce and thus express disagreement). Then, those statements which evoke consistent responses in terms of group pressure (e.g. always acquiescing and thus both agreeing and disagreeing with the content of the statements) cannot be reflecting the process of internalization. Those which evoke consistent responses to the content of the statement would be indicative of internalization. (2) Public and private behavior with regard to those statements whose contents are not critical would be indicative of compliance and identification. By manipulating the salience of the group and the conditions of surveillance the acquiescent behavior due to each could be assessed.

In comparing the Crutchfield situation using subjective stimuli with the same situation using objective stimuli it should be noted that differences and their implications are more widespread and significant than internalization vs. no internalization. For example, one would expect that with

objective stimuli the opportunities for identificatory processes are less in general than with subjective stimuli. For any particular subject the 'others' in the unanimous majority may appear to agree on items related to values and disagree on others. One would expect the opportunities for acquiescence as a result of identificatory processes to increase in this case since the attractiveness of the group would be increased. Although the Crutchfield technique using subjective stimuli is probably the most real of those discussed it could well be highly artificial for any one group or subject. Statements which are probably relevant to values or 'should' be relevant to values could well tap a whole range of behaviors including no more than those involved in a line judging task. Again, the kinds and extent of behaviors exhibited by any particular individual can be empirically determined.

C. Conclusion. Clearly, no single experimental procedure can be neatly classified as producing one process of acquiescence or another. However, the effect of any particular administration on each individual can be assessed in terms of the above. Relating any group pressure experiment to specific parameters affecting its similarity with and

generalizability to analogous everyday situations (and these processes represent only one kind of parameter) does provide a focal point with which to assess the balance between scientific objectivity and situational reality. An assessment of this balance is critical for an understanding of the reasons for variables operating in group pressure situations.

The above has perhaps implied a minimization of the importance of compliance and the opposite for internalization. This is not necessarily so. The issues, on a different level, are the relevant aspect of behavior, not whether or not acquiescent behavior in terms of those issues evidences compliance, identification or internalization. Thus, whether or not the Ku Klux Klanman only behaves as a racist in public (i.e. complies) does not make his behavior any more acceptable than that of the racist who actually believes in the efficacy of his actions. A large number of studies have demonstrated the positive correlation between situations in which compliance is probably the major process underlying acquiescence, with aesthetic or political conventionality (Beloff, 1958), 'the upward mobility syndrome of American core culture', loyalty to friends (Gruen, 1961), and a large number of personality factors. The fact that situations using objective stimuli and allowing for relatively little identification and probably no internalization, correlate with the broader

aspects of social influence indicates that compliance is, in itself, a relevant process indicative of other, possibly even more general, but certainly no less significant phenomena.

V. PRESTIGE SUGGESTION AND AUTHORITARIANISM.

In this chapter the meaning of conformity and four prototypical situations have been discussed. At the outset it was stated that, before one could consider the relationship of social and personality factors in a group pressure situation, the parameters of that situation had to be specified and controlled. The preceeding section explicated a means of empirically specifying one kind of parameter affecting the generalizability of experimental situations.

In this concluding section the discussion will focus on the concomitance between acquiescence and authoritarianism in group pressure situations. In doing so both kinds of parameters (those affecting scientific objectivity and those affecting generalizability) are considered as they bear on the relationship of authoritarianism to prestige suggestion in particular and conformity in general.

A. Prestige Suggestion and Authoritarianism. We have discussed the sorts of processes underlying acquiescent behavior. It follows from this consideration that the sort of experimentally induced acquiescence termed prestige suggestion

incorporates another variable into the situation, a prestigious influencing agent. Prestige suggestion may be defined as an opinion change based on the prior knowledge that a prestigious person (e.g. expert, authority) holds an opinion divergent with the original and similar to the subsequent or changed opinion of the subject. (cf. Argyle, 1958.) It is usually evidenced by an opinion change to an opinion held by a prestigious person. This sort of acquiescence is probably the most intuitively apparent common denominator of authoritarianism and conformity. Prestige suggestion is indicative of a submissive, uncritical attitude towards authorities.

A second, more general, congruence between authoritarianism and conformity is that of 'conventionalism', an inflexible attendance to conventional middle class values (cf. p.19) and conventionality, "...concurrence with the tenets, attitudes, and mores of a subject's culture or sub-culture" (Beloff, 1958, p. 99). Conventionality and conventionalism, prestige suggestion and authoritarianism, are covariants; this suggests similarity not congruence.

There are at least two basic incongruities between the definition and measurement of prestige suggestion. The essence of the definition of prestige suggestion is the basis of the opinion change. It is this basis which distinguishes

the phenomenon from acquiescence evidenced in the prototypical situations discussed. Experimentally, though not necessarily logically, the basis of an opinion change cannot be directly demonstrated. The problem is circumvented in the laboratory by attempting to eliminate all other foundations for the opinion change except prior knowledge of expert opinion. This is most expediently accomplished by having the prestigious person maintain an objectively determined, erroneous position; as might be the case in the Asch situation. However, the similarity of the experimental situation to everyday circumstances and hence the implications drawn from it, must vary to some extent as a function of the number of errors (or degree of error with subjective stimuli) evidenced by the prestigious influencing agent; unless, of course, one is prepared to content^d that in everyday circumstances, as in the laboratory, there is no valid justification whatsoever for considering a given person prestigious.

The second incongruity between the definition and measurement of prestige suggestion stems from the discrepant necessary implications of both. The definition of the phenomenon necessarily implies 'inhibiting authority' and 'not freedom'. An opinion change to the opinion of an authority need imply neither. Authority, in other words, is a necessary but not sufficient condition for authoritarianism. (cf. p. 15.)

Thus, in the experimental situation a subject may change his opinion to that of a prestigious influencing agent for any one or combination of reasons operating on at least ^{one of} two levels. On the first level a subject may be acquiescing as a result of compliance, identification, or internalization. On another level the subject may be acquiescing as a result of the influence of an agent (any agent) or as a result of the prestige of the influencing agent.

B. Prestige Suggestion as Identification. Prestige suggestion is then, that part of experimentally induced acquiescence which is based on the knowledge that a prestigious person holds a given opinion. The relative ease with which acquiescence can be produced in the laboratory (cf. Asch, 1958) makes it essential to first determine the amount of acquiescence occurring in the control situation (i.e. the identical situation without a prestigious influencing agent). Furthermore, a separation of that acquiescence dependent on the content of the stimuli (internalization) ^{from} ~~as well as~~ that which ~~also persists in private but~~ is independent of content (identification) is central to a valid estimation of the prestige effect. The reason being that prestige suggestibility cannot by definition be an explanatory factor for experimental

acquiescence at the same time as internalization. In one case movement is aimed at the congruence of behavior and perceived role requirements while in the other towards the congruence of values and behavior.

Internalization and identification are processes which can and do operate simultaneously in the everyday. However, in the experimental situation the object is to isolate effects in such a manner that one can determine that part of acquiescence solely (in the ideal case) due to prestige suggestion. The problem then is to separate acquiescence based on a congruence between a subject's values and the opinion stated by the prestigious influencing agent from that resulting from the subject's perception of the role requirements of the situation. The contention is not that there would be no effect on the subject's perception of his values but that his acquiescence may or may not be evidence of a prestige effect. The problem is circumvented by using objective stimuli since this eliminates agreeing because this is congruent with values. However, this introduces problems in terms of situational reality and hence generalizations which can be made from this sort of experiment (cf. p.66).

The situation is maximally significant when the stimuli are subjective or at least contain an element of subject-

ivity. In this case one must determine the content relevant materials and either avoid them when measuring prestige suggestion or attempt to alter behaviors towards them through prestige suggestion. In the latter case this implies additional control in the form of repeated pressure to acquiesce by a non-prestigious influencing agent. In either case the most reasonable explanation for acquiescence is compliance or identification since whenever a given type of opinion is determined to be causing responses to their content, any later response independent of their content suggests error in the estimation of content relevant behavior in the first instance. At best the effect of prestige suggestion on internalized values would have to be ascertained in a follow-up study since the term value implies a degree of consistency or persistence greater than that which would permit simple experimental manipulation.

The acquiescence which results from prestige suggestion is designed to occur in a situation emphasizing role requirements and playing upon a subject's concern with the social anchorage of his behavior. As such it is basically indicative of the process of identification. However, one might expect a certain amount of extinction to occur in private, evidencing compliance as well. This compliance would probably be greater than that evidenced in the control

situation since, although a large part of the behavior evidenced would serve the self-definition of a subject, a result of this could well be an increased desire to achieve a social effect in the authority figure. In this case again, the basis of a response will have been changed and again the increased acquiescence will be a partial function of other variables besides prestige suggestion.

Prestige suggestion is then, a susceptibility to acquiesce in a situation which emphasizes the role of the influencing agent and thus the process of identification. "Greater influences are exerted when the other person in the situation has a status higher than that of the subject This is found true regardless of the manner in which status is created" (Blake and Mouton, 1961, p. 13.) Intelligent, strong, successful, well educated, high social status, or prestigious persons, experts, celebrities, clergy, and generals will all induce more acquiescent behavior than other influencing agents. (cf. Campbell, 1961; Pallone, 1964; Berkowitz and Lundy, 1956; Sherif, 1958; Lasky, 1962; Brown and Pallant, 1962.) Related evidence for this effect suggests that acquiescence is dependent on self-confidence (Gorfein, 1964).

C. Empirical Studies. Studies directly relating prestige suggestion and authoritarianism to religiosity are discussed in Chapter Five. The fact that prestige suggestion is a method of inducing experimental acquiescence by increasing the salience of the influencing agent for the subject, indicates that its effects are more powerful than those of the basic methods. (cf. p. 61.) The relationship between conformity and authoritarianism is highly indicative of that between the latter and prestige suggestion.

Vidulich and Kaiman (1961) used the autokinetic effect in a situation similar to that of Sherif. The direction of movement was the variable and a naive subject responded after an accomplice of the experimenter on critical trials. These authors employed a two way analysis of variance design - high and low authoritarians (as measured by the Dogmatism Scale, Form E) vs. high and low prestige experimenter accomplices, high school student and college professor respectively. They found that, "The closed groups agreed significantly more with the high status source." (Ibid. p. 642.) They also concluded that the interaction was more important than dogmatism or prestige of influencing agent alone.

Crutchfield (1955) states, "...the F Scale (Adorno et. al. 1950), a measure of authoritarian attitudes, correlates +.39 with conformity, and a staff rating on amount of authoritarian

behavior manifested in a standard psychodrama situation correlates $+ .35$ with conformity." (cf. Crutchfield, 1963, p. 403.) Nader (1959) noted that acquiescence in the Asch situation correlated $+ .30$ with Ethnocentrism (E Scale) and $+ .48$ with authoritarianism as determined by the F Scale. (cf. Bass, 1961, p. 44.) Smith et. al. (1964b) report a correlation of $.37$ ($+ .28$ with IQ partialled out) between F score and conformity in the Asch situation. Smith (1964a) found that authoritarians conformed more in the Asch situation than democrats. Campbell (1961, p. 131) cites additional evidence for this relationship.

Further evidence stems from a consideration of a few of Crutchfield's (1955) characteristics of conforming individuals.

With respect to authority is submissive, compliant, and overly accepting.

In conforming tends to do things which are prescribed.

Overcontrols his impulses; is inhibited....

Is suggestible; overly responsive to other people's evaluations rather than his own.
(Crutchfield, 1963, p. 403.)

Still further evidence for the positive relationship between authoritarianism and conformity is suggested by comparing F scale items with the following which were checked true by extreme conformists in the Crutchfield study.

I am in favor of very strict enforcement of all laws, no matter what the consequences.

Once I've made up my mind I seldom change it.

I always follow the rule: business before pleasure.

The trouble with many people is they don't take things seriously enough.

(Crutchfield, 1963, p. 403-404.)

Comparable F Scale items might include:

Obedience and respect for authority are the most important virtues children should learn.

If people would talk less and work more, everybody would be better off.

D. Conclusions. Authoritarianism and conformity are related in experimental situations. The generalizability of

this statement to the broader aspects of social influence is dependent on the similarity of these experimental situations to their everyday analogues. An attempt was made in this chapter to indicate why this should be so and a means of estimating this generalizability along one dimension was suggested. In Chapter Five the implications of the relationship between authoritarianism and conformity and religiosity and conformity will be further discussed in terms of further empirical evidence and the research presented herein.

CHAPTER FOUR : CREATIVITY

- I. AN OVERVIEW
- II. THE PSYCHOANALYTIC THEORY OF CREATIVE BEHAVIOUR
- III. THE ASSOCIATIVE THEORY
- IV. SYNECTICS
- V. CREATIVITY AS DIVERGENT PRODUCTION

I. CREATIVITY: AN OVERVIEW.

A. Early History. The scientific study of creative behavior dates from Galton's (1869) work, Hereditary Genius: An inquiry into its laws and consequences. A few of the significant precursors of current trends in research and theory include Dearborn (1898) and his work with inkblots as stimuli and members of the Harvard community as subjects, Chassell (1916) who devised a number of tests duplicating or remarkably similar to some still in use, Wallas (1926) who attempted a formulation of the stages involved in creation (preparation, incubation, illumination and elaboration) and Rossman (1931) who suggested nine stages of invention. A number of these researchers as well as Welch (1946) noted the lack of correlation between tests of creativity and tests of intelligence. Spearman's The Creative Mind (1930) deserves special mention as an early formulation.

B. Current History. Current interest in creative behavior is usually dated from J.P. Guilford's presidential address ("Creativity") to the American Psychological Association (Guilford, 1950). An outstanding characteristic of this interest has been its exponential growth since that time. The sheer

bulk of publications between 1950 and 1960 equalled that of the preceeding 100 years. This quantity was again equalled between 1960 and 1965 and equalled again in the subsequent year and one-half. Another indication of this accelerated growth is the fact that prior to 1965 there had been some 300 doctoral dissertations concerned with creativity; in the following year and one-half there were 200 more. (cf. Parnes and Brunelle, 1967.)

Apart from his presidential address, Guilford (1967c, p.6) cites "other trends in our Zeitgeist that converged upon the same effect" including "the great efforts towards innovation in research and development, culminating in the atomic bomb." Sustenance of this exponential growth since 1950 is generally attributed to the practical implications of the topic for the Space Race. (cf. Taylor, 1964.) Three of the more influential studies of the early fifties included The Making of a Scientist (Roe, 1952), The Creative Process (Ghiselin, 1952), and Kris' (1950, 1952) neo-analytic formulations of the creative process.

Growth in the late fifties and early sixties was further stimulated by Osborn's (1957) ^{Applied} Creative Imaginations which had apparently circulated as early as 1953 (cf. Guilford, 1967c) and which had tremendous popular as well as serious attention (cf. Parnes and Meadow, 1959); Synectics, Gordon's (1961)

operational statement of the creative process (discussed below); and the work of Getzels and Jackson (1961, 1962). Torrance (1967) lists over twelve research centers which have generated significant contributions. The four most productive being The University of Southern California (Guilford), The University of Minnesota (Torrance), The University of California at Berkley (Barron and Mackinnon), and The University of Utah (Taylor).

C. This Chapter is organized around a pivotal problem of research in the field of creativity, the criteria of creativity. (cf. Taylor, 1964b.) This problem is evidenced in the literature by the polarity between the study of creativity as a process and creativity as a product. The most important theoretical formulation of the creative process is the neo-analytic. The most influential statement regarding creative products, The Structure of Intellect view of Guilford and his associates. (cf. Guilford, 1967a.)

Two other theories of creative thinking are included in this survey, Associative Theory and Synectics. Associative Theory (Maltzman, 1960; Mednick, 1962) is the most specific (Guilford, 1967b) and experimentally adaptable. It is also

one of the more recent. Syneectics (Gordon, 1961) is an eclectic theory and has adapted much from the Neo-Psychoanalytic and Associative viewpoints. Its uniqueness stems from the fact that it represents an operational statement of the creative process and to a large extent circumvents the problem of criteria without resorting to the study of eminently creative individuals. Guilford's statement represents the most important sustained enterprise to date (cf. Torrance, 1964) and the most comprehensive theory considered. His work is the basis of the instruments and approach used herein for the assessment of creative thinking abilities; the context within which this assessment is made, however, is the result of more general considerations, particularly those concerning social factors bearing on creative production.

The survey which follows is principally concerned with theoretical formulations. Two important aspects of the literature of creativity are not discussed in the survey proper: creativity and intelligence and the extensive literature centered on the work of E. Paul Torrance. Both are discussed briefly in other contexts. Some of the experimental aspects as well as findings relevant to the theories discussed are considered in this survey. The concomitants of creative behavior are not systematically reviewed except as they specifically apply to the discussion throughout the report, particularly in Chapter Five.

II. THE PSYCHOANALYTIC THEORY OF CREATIVE BEHAVIOR.

Psychoanalytic theories of creativity differ from others in three important respects. (1) The most significant difference stems from the fact that it is an exclusive concern with the creative process as opposed to the creative product. (2) The criteria problem is approached, or more accurately, avoided by utilizing eminent artists and writers (usually poets) as subjects. (3) The emphasis is placed on the motivational or emotional aspects of creativity as opposed to the intellectual aspects. The following discussion is centered on the principal theoretical construct of this approach - regression in the service of the ego.

A. The Freudian View. "The most influential current systematic approach to creative thinking is the psychoanalytic one, a conceptualization which at least in the psychological literature is steadily gaining in pre-eminence." (Getzels and Jackson, 1962, p. 89.) These authors discuss what are generally considered to be the salient points of the Orthodox approach to creativity.

1. Creativity is the result of conflict. The unconscious motivating forces in the creative resolution of conflict are similar to those producing the neurotic resolution of conflict. The conflict itself is generally believed to be Oedipal in origins (Fenichel, Sachs, Hendricks) and guilt producing. (cf. Munsterberg and Mussen, 1957.)

Schafer (1958, p. 127) cites examples of the traditional stereotype of the creator from Plato's "divine madness" to "the bohemian and crackpot stereotype of the artist in current times." Obviously the above view with regard to creativity and neurosis has assisted to further this misapprehension which is by and large unsupported by experimental evidence. For example, Hammer (1964) comparing manifestly creative art students with others found in fact that the creative subjects evidenced more feminine responses on the TAT but also more strength, power, ambition, confidence and determination. A number of other studies have demonstrated the inaccuracy of stereotypes such as the creative adolescent as over-achieving (Getzels and Jackson, 1962), as well as portraying a more accurate picture of the personality characteristics of the artist and creative scientist. (cf. Barron, 1957; Cross et. al. 1967; Cattell and Drevdahl, 1955.)

2. The psychic function and effect of creativity is the release of pent-up emotion from these conflicts (i.e. the relief of guilt). Munsterberg and Mussen (1957) using the Rorschach concluded that artist "suffer from intense guilt feelings" and suggested that these feelings stemmed from unresolved Oedipal conflicts.

3. Creativity is derived from "freely rising" fantasy - the daydream and childhood play.

4. The creative person accepts these phantasies; the non-creative individual suppresses them. Using the Visual Motor Gestalt, Rorschach, Human Figure Drawings, Thematic Apperception, and Vigotsky Concept Formation Tests with recognized creative individuals and equally successful business men, Myden (1959) concluded that the creative subjects evidenced more primary process and evidenced it everywhere as opposed to the less creative subjects. However, a number of studies cited below in support of the neo-analytic view, suggest important qualifications. (cf. Stein and Meer, 1954; Pine and Holt, 1960.)

5. Creativity is a substitute for and a continuation of childhood play.

B. The Neo-Psychoanalytic View. The following response by Schiller to a friend who complained of his lack of creativity (cf. Stein, 1953, p. 313), suggests the basis of this view.

The reason for your complaint lies, it seems to me, in the constraint which your intellect imposes upon your imagination. Here I will make an observation and illustrate it by an allegory. Apparently it is not good - and indeed it hinders the creative work of the mind - if the intellect examines too closely the ideas already pouring in, as it were, at the gates. Regarded in isolation, an idea may be quite insignificant, and venturesome in the extreme, but it may acquire importance from an idea which follows it; perhaps, in a certain collocation with other ideas, which may seem equally absurd, it may be capable of furnishing a very serviceable link. The intellect cannot judge all those ideas unless it can retain them until it has considered them in connection with these other ideas. In the case of a creative mind, it seems to me the intellect has withdrawn its watchers from the gates, and the ideas rush in pell-mell, and only then does it review and inspect the multitude. You, worthy critics, or whatever you may call yourselves, are ashamed or afraid of the momentary and passing madness which is found in all real creators, the longer or shorter duration of which distinguishes the thinking artist from the dreamer. Hence your complaints of unfruitfulness, for you reject to soon and discriminate too severely.

The Neo-Psychoanalytic view of creative thought is most clearly linked to Freud by that aspect of mentation which he termed the system preconscious. Kris (1950, 1952) was the first to shift the emphasis from the role of the unconscious to that of the preconscious in the generation of creative thought. He cites Freud's view of the relationship. The preconscious is "capable of becoming conscious easily and under conditions which frequently arise" while with regard to the unconscious, "such a transformation is difficult, can only come about with considerable expenditure of energy or may never occur." (cf. Kris, 1950, p. 542 - quoting Freud.) Getzels and Jackson (1962, p. 94) cite Schachtel's comment as a summary of this position. "...Creative behavior is seen as essentially 'the product of a repressed libidinal or aggressive impulse to infantile modes of thought or experience, to the primary process, albeit in the service of the ego.'" (cf. Wild, 1965, p. 161.)

C. The Preconscious. The more recent neoanalytic view (Kubie, 1958) delineates the preconscious as intermediate to the unconscious on the one hand and the conscious on the other. Kris clung to regression to primary process in the service of the ego (i.e. primitivization of ego functions). Since the unconscious is often viewed as restrictive and stereotyped, this view is difficult to maintain as indicative

of the creative process (though not necessarily the neurotic). Kubie's (1958) view is that creative thought is a function of the extent to which preconscious processes can resist "unconscious retrospective critique" on the one hand and the "rigid compromise formations" of the unconscious on the other.

"Regression in the service of the ego is a partial, temporary, controlled lowering of the level of psychic functioning to promote adaptation." (Schafer, 1958, p. 122.) This author maintains the legitimacy of the word "regression" in this context since primary process and its close derivatives are normally not allowed to become conscious. He adds (Ibid. p. 125), "...it is warranted to speak of the process being in the service of the ego in so far as the regression serves ego interests (such as being creative or empathic), is relatively easily reversible, and is amenable to productive working over by the ego in terms of its adaptive pursuits."

D. Productive and Non-Productive Views of the Theory.

There are a number of studies which explicitly or implicitly deal with regression in the service of the ego. The Myden (1959) finding that creative individuals (i.e. recognized creative individuals) evidenced more primary process than

equally successful businessmen, has been mentioned. (cf. p.101.) Pine and Holt (1960) conducted a very significant study in connection with adaptive regression which modifies the Myden findings. The instruments they used were projective and a variety of achievement and creativity tests. These authors found that in general, "control over primary process expression, rather than gross amount of expression per se, is related to the quality of creative products" (Ibid. p. 377) Further support for the controlled and adaptive nature of this regression in creativity comes from an earlier Rorschach study by Stein and Meer (1954). These authors found that creative individuals gave significantly more well-integrated responses to tachistoscopically exposed Rorschachs than did uncreative research scientists.

Psychoanalytic theory has had a rather unique history of criticism within the literature of creativity. Significantly, constructive criticism has come primarily from within the field itself. (e.g. Maslow, 1964; Maslow, 1962; Fromm, 1964.) The range of non-constructive criticism is particularly wide. Spearman (1930, p. 12) provides one of the earliest and, from a non-academic view, most entertaining.

Psycho-analysis. With this third claimant to be the New Psychology, the part played by mental events, far from being eliminated, receives a vast extension; to consciousness is added on the boundless depth of the "sub-conscious" mind; and herein is found to revel and riot all that is most fantastic. Prodigious is the crop of similes, metonyms, litotes, and transferred epithets; in fact, all the graces of conscious poetry, now redoubled in the service of subconscious bestiality. But as to how such feats are possible; as to the mental laws by which either poet or beast is able to conjure up his amazing tropes; about all this the psycho-analysts show little interest. Absorbed as they are in hunting down the origin of motives, they lend us but scant help in searching out the creation of ideas.

Guilford (1967b) provides one of the later and from an academic point of view, least entertaining.

To say that creative thinking is not conscious says nothing new and explains nothing, the problems of describing and comprehending the nature of that thinking still remain.

A justification of the psychoanalytic view is not attempted here. Its influence, comprehensiveness, and unique attention to a theory of the creative process are sufficient to its inclusion. Its ramifications herein and elsewhere cannot be

III. THE ASSOCIATIVE THEORY.

A. Origins and Definition. The origin of the Associative Theory of creative production is American Behaviorism. Its chief proponents are Maltzman (1960) and Mednick (1962). Mednick (1962) cites a number of examples from Ghiselin (1955) which imply "The Associative Basis of the Creative Process." Einstein discusses "combinatory play" of ideas. Coleridge refers to a collage by Ernst as grasping two distinct realities and drawing a spark from their juxtaposition. Poincaré, in now familiar words, describes his discovery of a class of Fuchsian Functions, "Ideas rose in crowds; I felt them collide until pairs interlocked...." (cf. Ghiselin, 1952.) Aspects of Schiller's remarks (cf. p.102) connote the same thing.

The current definition of the associative basis of creative thought can be seen to be a 'recombination of old ideas' producing a new theory.

Poincaré: ...to create consists of making new combinations of associative elements which are useful. (Ghiselin, 1952)

Spearman: ...the final act in creativity must be assigned to ... displacing a relation from the ideas which were its original fundaments to another idea, and thereby

generating the further idea which is correlative to the last named, and which may be entirely novel.

(Spearman, 1930, p. 77)

Mednick: ...we may proceed to define the creative thinking process as the forming of associative elements into new combinations which either meet specified requirements or are in some way useful. The more mutually remote the elements of the new combinations, the more creative the process or solution. (Mednick, 1960, p. 221)

It should be noted here that the phrases "meet specified requirements" and "are in some way useful" are central to this definition. Without these qualifications any number of trivial yet remote associations would be classified as creative. (cf. pp. 114, 121.) On the other hand there are objections to any criterion of this sort. "The criterion of 'usefulness' involves a value judgment in a way that science cannot tolerate or manage. Many a useless invention is an invention nonetheless." (Guilford, 1967b, p. 420.)

B. Creative Associations. Mednick (1960) has suggested three ways in which associative elements form new and useful (i.e. creative) combinations:

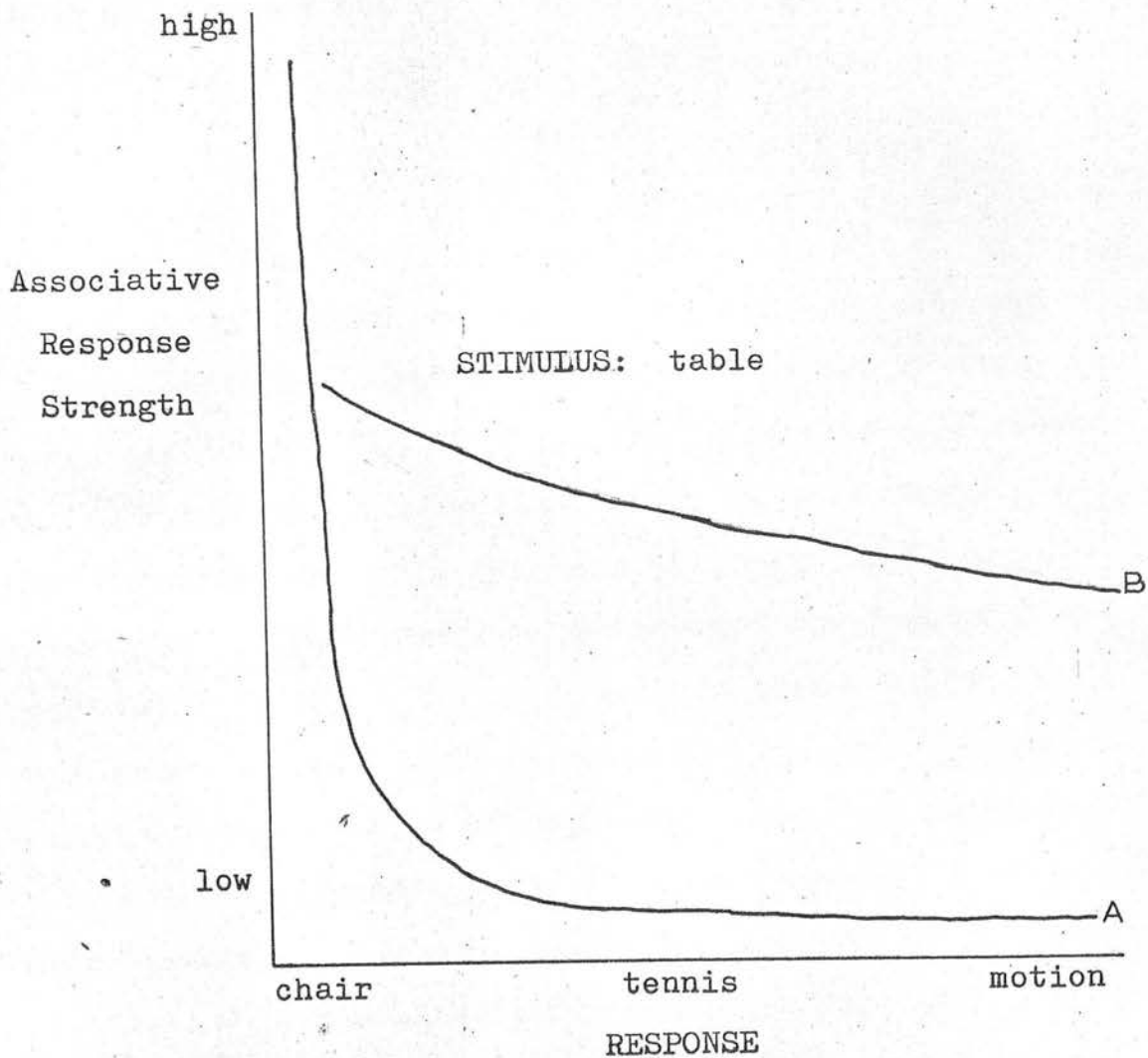
1. Serendipity. "The requisite associative elements may be evoked contiguously by the contiguous environmental appearance (usually an accidental contiguity) of stimuli which elicit these associative elements." (Ibid. p. 222.) The author cites the dubious example of the physicist who writes isolated facts on slips of paper and drops these into a fish-bowl. He then devotes a part of each day to pulling out pairs of slips in the hopes of coming across the contiguous environmental appearance of stimuli which will elicit a creative response. One wonders at the probability of inducing a Theory of Simultaneity by this system not to mention the probability of this scientist recognizing the significance of the associative elements should they appear. Riegel et. al. (1966) note that creative thought is, "initiated only at the moment when the items have been drawn and consist(s) in cognizing, relating and detecting a unique (creative) context which locates both items simultaneously." (Ibid. p. 55.)

Guilford's (1967b) epithet of "antiscience" is, in this context, particularly appropriate. This sort of explanation stops questions and investigations - the essence of

science. The fact that the faculty of making accidental and happy discoveries seems to be possessed by those eminently prepared to make those discoveries has been often noted. Cannon (1950), for example, quotes Pasteur, "Dans les champs de l'observation le hazard ne favorise que les esprits prepares."

2. Similarity. "The requisite elements may be evoked in contiguity as a result of the similarity of the associative elements or the similarity of the stimuli eliciting those associative elements." (Ibid. p. 222.) This means of achieving a creative solution is similar to Spearman's 'Principle of Relations (the class, 'likeness'). (cf. Spearman, 1930, pp. 18-20.) Spearman rejects it as creativity on the grounds that nothing new is created - it only copies what already exists. Indeed, if the response is evoked as a result of the similarity of associative elements it cannot, by definition be creative. The creativity of a process or solution is determined by the mutual remoteness of the associative elements. (cf. p. 109.) The second possibility (similarity of the stimuli evoking the response) is most aptly termed "creativity in the second degree." (Spearman, 1930, p. 22.)

Figure 2. The Associative Hierarchy.



3. Mediation. "The requisite associative elements may be evoked in contiguity through the mediation of common elements." (Mednick, 1962, p. 222.) This is probably the most definitive means by which one arrives at a creative solution. It is in fact the basis of the Remote Associates Test, the principal research tool utilized in connection with this theory.

C. Conditions of Achievement. The achievement of a creative solution is consequent on five conditions.

1. The presence of the requisite elements in the response repertoire.

2. The Associative Hierarchy. "The organization of individuals' associations will influence the probability and speed of attainment of creative solutions." (Mednick, 1962, p. 222) Some individuals will give many common responses to the stimulus word 'table' and very few uncommon responses. Others will give relatively few common responses and relatively more uncommon ones. If the associative response strength is represented along the ordinate (cf. Figure 2) with low response strength at the origin and a continuum of commonality along

the abscissa with most common responses at the origin, then some individuals would be portrayed by a steep gradient (A) and others by a flat gradient (B). Highly creative individuals will tend to be represented by the flatter gradient (i.e. as responding at an even rate and producing many more responses than low creative subjects). The less creative individual, represented by the steeper gradient, will respond with many more common associations at a very high rate and relatively fewer uncommon associations at a very slow rate.

3. Number of Associations. "The greater the number of associations that an individual has to the requisite elements of a problem, the greater the probability of his reaching a creative solution." (Ibid. p. 224.)

4. Cognitive or Personality Styles. Depending on the problem (stimulus) different cognitive or personality styles (e.g. perceptual vs. conceptual, visualizer vs. verbalizer) will affect the achievement of creative solutions.

5. Selection of the Creative Combination. "In the case where no criteria are specified, the subject is typically producing random combinations of elements...." (Ibid. p. 224.)

D. The Remote Associates Test. Problem: "...we must provide stimulus elements from mutually remote associative clusters and have the subject find a criteria-meeting mediating link which combines them." (Ibid. p. 227.) This statement is the basis of the Remote Associates Test an example of which follows.

What word is associated with all three of these words?

round dog boat Answer: house

powder shoe toad Answer: horn

hook cat story Answer: fish

The test is reported to have strong predictive power. (cf. Mednick, 1962.) Houston and Mednick (1963) have suggested that creativity as measured by the RAT ^{is related to} and a need for novelty are related. In this experiment subjects chose one of two words written on a card and the experimenter responded to this choice with either a highly common association (given whenever a non-noun was chosen) or a highly improbable association (given whenever a noun was chosen). The high scorers on the RAT chose nouns significantly more often than did the low scorers. The authors concluded that creative subjects have a strong need for associative novelty. They did note the possibility that high creative subjects were avoiding the banal but attempted to refute this argument on the grounds that the situation is similar to that of

a rat at a two way choice point with one choice leading to food and the other choice leading to no reward. If the rat makes the choice leading to food it is meaningless to argue that he has made the choice in order to avoid no food. This example was particularly pertinent to the experiment since its rationale was in terms of: need + satisfaction = reinforcement. That is, if there is a need for associative novelty and one satisfies that need, the response (choosing a noun instead of a non-noun) leading to that satisfaction (a highly improbable association) should be reinforced and thus creative subjects, who were hypothesized to have a need for novelty, should choose nouns more frequently than non-creative subjects.

Assuming for the moment that the behavioral approach can deal adequately with creativity (cf. Maltzman, 1960), this experiment is not analogous to a rat in a maze with food in one direction and nothing in the other as suggested by the authors. If the experiment was analogous to this situation it would clearly be banal to argue that the rat always chooses the direction leading to food because he is avoiding the choice leading to no food. In fact the experiment would seem to be more analogous to that of a rat in a maze with food, water, warmth in one direction and nothing in the other. To assume that the rat chooses the direction leading to food,

water and warmth because he is hungry is not valid. In other words it could well be that high performers on the RAT are responding in this manner because they are more intelligent and are avoiding insult, boredom, etc.... Another point is worth noting with respect to this experiment and the RAT. Riegel et. al. (1966) found that in fact, the associations of low creative subjects are similar to free associations (i.e. highly improbable associations). Research on the associative theory of creativity has tended to center on the training of originality to the detriment of establishing the validity of the RAT, as a general test of creativity and/or devising other tests of creativity.

E. On Training Originality. The principal researcher in this area is Irving Maltzman, who, with his students, has conducted a number of studies based on the principles of operant conditioning. The basic method is as follows. All subjects are given a list of words to which they associate. There are usually 25 words in the list which are presented singly. Subjects are assigned scores based on the uncommonness of their responses (i.e. their operant level is established). The experimental group is then given a further list and a number of variables are then brought into play. A few

of these experiments are discussed below - each as it bears on a particular variable.

1. Transfer. The results in terms of transfer are not clear with respect to the work of Maltzman and his associates, although Guildford (1967b, p. 454) cites successful demonstration of transfer effects by other researchers. Maltzman et. al. (1958a) reported ambiguous results with regard to transfer from Guildford's Quick Responses Test to his Unusual Uses Test. However, Maltzman et. al. (1958b) report, "...if different uncommon responses are elicited, the tendency to give other uncommon responses will increase and problem solving would be facilitated as a consequence. Partial [women only] confirmation of this hypothesis was obtained." (Ibid. p. 454.) In a later experiment involving Maier's String Problem (cf. Forgas, 1966) Maltzman et. al. (1964) found no reliable differences between four preconditions: control, reading lists of words facilitating transfer, reading lists of words inhibiting transfer, and reading lists of words which were uncommon. The authors conclude: "Results from the present series of experiments indicate that performance on the problems employed which have only one correct solution can not be facilitated by originality-training procedures successfully employed with tasks having no one correct solution." (Ibid. p. 20) (cf. Maltzman et. al, 1962.)

of these experiments are discussed below - each as it bears on a particular variable.

1. Transfer. The results in terms of transfer are not clear with respect to the work of Maltzman and his associates, although Guildford (1967b, p. 454) cites successful demonstration of transfer effects by other researchers. Maltzman et. al. (1958a) reported ambiguous results with regard to transfer from Guildford's Quick Responses Test to his Unusual Uses Test. However, Maltzman et. al. (1958b) report, "....if different uncommon responses are elicited, the tendency to give other uncommon responses will increase and problem solving would be facilitated as a consequence. Partial [women only] confirmation of this hypothesis was obtained." (Ibid. p. 454.) In a later experiment involving Maier's String Problem (cf. Forgas, 1966) Maltzman et. al. (1964) found no reliable differences between four preconditions: control, reading lists of words facilitating transfer, reading lists of words inhibiting transfer, and reading lists of words which were uncommon. The authors conclude: "Results from the present series of experiments indicate that performance on the problems employed which have only one correct solution can not be facilitated by originality-training procedures successfully employed with tasks having no one correct solution." (Ibid. p. 20) (cf. Maltzman et. al, 1962.)

2. Reinforcement. There do seem to be effects resulting from reinforcement. However, the meaning of these effects is not appreciable in any simple terms. Maltzman et. al. (1962) using the Kent-Rosanoff word test divided their pool of subjects into three groups. The control group associated to 100 words from the list and the experimenter said nothing. Condition I subjects received positive reinforcement (i.e. the experimenter said, "good") each time they gave an association that was not one of the three most common. Condition II subjects received reinforcement each time they gave one of the three most common associations. Conditions I and II were affected between the 20th and 80th trials. Trials one to twenty represented operant level score and eighty to one hundred, test level. The correlation between operant and test scores was $+ .36$ (cf. Maltzman and Simon, 1959; Ridley and Birney, 1967) and an analysis of covariance lead to the conclusions that (a) reinforcing uncommon responses has no effect, (b) reinforcing common responses has a significant effect, and (c) there was no significant transfer effect to Guilford's Unusual Uses Test. In an earlier study (Maltzman et. al. 1958a) it was determined that partial verbal reinforcement had no effect.

3. Other Findings. Other findings along these lines include those of Maltzman et. al. (1958a) in which it was demonstrated that repeatedly calling for different or unique responses to the same word increased originality as did instructions to be original. Freedman (1965) found that creativity was facilitated by having subjects associate to ten words vs. having them define the ten words or read the associations of the other subjects. Ridley and Birney (1967) found that general problem solving heuristics significantly increased creativity test scores. They suggest that creativity is in fact an ability to apply relevant principles to a task. This finding could imply (a) an alternative to the associative basis of originality or (b) a serious question with regard to the validity of uncommon verbal associations as a measure of originality.

F. Critique. The principle shortcoming of the Remote Associates test as a measure of "creativity" is its specificity. Either it is very loosely applicable to a whole range of abilities necessary for creative thinking or it disregards many of them. (cf. Guilford, 1967b.) In fact the ability can be factorially specified within the Guilford (1967a) Structure of Intellect Model.

The Maltzman studies, apart from the possibility that they are in fact an exercise in general problem solving heuristics or learning how to learn, must answer another question with regard to their validity. There is no requirement whatsoever with regard to the relevance of a response. Indicating that the number of uncommon responses can be increased says very little indeed about the recognition of relevant associations. One could draw any one of a whole range of conclusions with regard to originality within this context, is it neurotic regression, non-adaptive fantasizing, doubling the number of slips of paper one draws out of a bowl or creativity?

IV. SYNECTICS.

A. Definition. The word 'synectics' is a Greek derivative which means the joining together of separate and apparently irrelevant elements. Synectics is "...an operational theory for the conscious use of the preconscious psychological mechanisms present in man's creative activity." (Gordon, 1961, p. 3.) Through the integration of diversely qualified individuals into the problem-stating, problem-solving group, Synectic Theory aims to discover the basic psychological mechanisms of creative behavior. The theory is eclectic and embraces elements of the Psychoanalytic and Associative theories as well as aspects of both the Wallas (1945) stages of creation and Rossman (1931) stages of invention, and "brainstorming" (Osborn, 1957), to mention a few.

B. Assumptions. Synectics is based on three assumptions.

1. The creative process within individuals can be described and taught, to increase creativity in individuals and in groups.

2. The psychic processes underlying invention in the arts and sciences are similar.

3. The individual process is directly analogous to the group process.

C. Hypotheses. The general hypotheses of the theory are:

1. Creative efficiency can be increased if the psychological process is understood.

2. The important aspects of creative production are the emotional and irrational rather than the intellectual and rational.

Appreciating
3. Understanding the emotional and irrational will increase the efficiency of creative output.

D. Stages. There are nine stages representing the various phases of synectics theory. These stages also represent the ordered process whereby the theory is operationalized.

1. The Problem as Given. The problems are either given (e.g. by management) or discovered by the Synectics group. Because Synectics has been principally applied industrially, the problems are usually technological (e.g. design a zipper that operates from the inside, is vapor-proof, and is operable under the extreme physical conditions of outer space). However, the theory clearly has significant impli-

cations particularly for education. Theoretically the elegance of a solution is indicated ^{by the} ratio of the multiplicity of variables to the simplicity of the solution. In fact management is asked to submit a list of "old-walnuts" - long standing problems. The problem and/or the variables making up the problem are proposed by members of the group and/or others.

2. Making the Strange Familiar. The theory postulates the initial problem as one of appreciation. No matter how old the problem "concentrated analysis will uncover elements not previously revealed." (Gordon, 1961, p. 158.) Contrary elements are not resolved at this stage; rather, apprehended.

3. The Problem as Understood. This stage is the point at which atomistic aspects of the problem are isolated for examination. It is pertinent here that experts may be called in at this or succeeding stages. The role of the expert is discussed below in connection with criticisms of the theory.

4. Operational Mechanisms. Synectics mechanisms are intended to induce appropriate psychological states and thus promote creative activity. The basic mechanism is the analogy (metaphor) and four types are systematically em-

ployed. The mechanisms are intended to make the now familiar problem - strange.

a. Personal Analogy. "Personal identification with the elements of a problem releases the individual from viewing the problem in terms of its previously analyzed elements." (Ibid. p. 37.) There are many reports of this occurring in connection with famous discoveries and creations. Some include, Kekule's discovery of the benzene ring after envisioning a snake swallowing its tail; Keats' Endymion, "I leaped headlong into the sea, and thereby have become better acquainted with the sounds, the quicksands, and the rocks ..."; and Einstein, who wondered at what he would see if he looked into a mirror while traversing space astride a shaft of light.

b. Direct Analogy. This mechanism involves the actual comparison of parallel facts. Gordon (Ibid. p. 41) cites Alexander Graham Bell's analogy of the human ear with what came to be the telephone, the foundation of Goethe's literature in music, and a multitude of technical problems solved by observing direct biological analogies.

c. Symbolic Analogy. The individual summons up an image which, though technically inaccurate, is aesthetically pleasing (~~i.e.~~^{e.g.} as in poetic expression). "The lion's chrysanthemum head." (Ibid.)

d. Fantasy Analogy. This is wish fulfillment brought to bear on technical problems.

With the exception of the above instance, ~~well-known~~ well known illustrations have been cited to exemplify these mechanisms. Concrete technological or political examples which have occurred in the Synectic situation are numerous (Ibid., throughout). However, they are usually recorded verbatim and extremely long.

5. Psychological States. As a result of the above mechanisms "the mind's attitude toward the problem as understood attains the states of involvement, detachment, deferment, speculation and commonplace-ness which Synectics theory believes describes the psychological climate most conducive to creative activity." (Ibid. p. 159.)

6. States Integrated with Problem. Once the mechanisms have induced the state, the most pertinent analogy is conceptually compared with the problem as understood. The problem is thus freed from its usually rigid form.

7. Viewpoint. Each time an analogy is compared a new viewpoint is achieved. When the comparison leads to technical insight the viewpoint is actual.

8. Solution. The viewpoint is tested or becomes the subject of further research. The activity in this phase depends on the implications of particular viewpoints.

E. Criticisms and Conclusions. This brief outline of the operational aspects of the theory indicates many of the theory's innovative essentials. Three significant aspects of the theory will be touched upon in conclusion and some criticisms of the theory discussed.

1. Much of the theory is implicitly psychoanalytic. Wish fulfillment, play and irrelevance and the "Hedonic Response," connote this approach. The mechanisms suggest a means of lowering the barriers of defense surrounding the precon-

scious and Gordon maintains in connection with this point that the conscious attempt to analogize stimulates the abilities concerned with creative thinking.

2. Synectics circumvents, to a large extent, the problem of criteria. At least in terms of its industrial or problem solving application, the process and theory is concerned with the production of practicable solutions to established problems. The problem is, in this context, set in such a manner that a 'solution' is by definition useful and its practicability estimable.

3. Synectics is essentially dissimilar from other types of group problem solving. It differs from the "brainstorming" approach in terms of its object and the function of the group in achieving this object. As opposed to the "brainstorming approach", the group is both essential and inessential and the object much more than creating a mood. (cf. Hilgard, 1959.)

Guilford has criticized the group thinking approach on the grounds that "Gordon (1961, p. 10) maintains that group thinking is always superior to individual thinking." (Guil-

ford, 1967b, p. 443.) This is incorrect. Gordon (1961, p. 10) states, "We have found that for problem solving, as well as for the purpose of research into creative processes, a properly operating group has advantages over the individual." Earlier Gordon maintains, "overemphasis on 'group' as an ultimate creative context can be equally detrimental whether we call the group a team, a task force, or a committee. The group, without a disciplined, integrated approach, degenerates toward its lowest common denominator, i.e. toward the level of the 'safest', the most obvious, and most superficial. The group in this sense deserves all the criticism presently being levelled at 'group-think'." (Ibid. p. 9.) The principal advantages of the Synectics group over the group-think type are that efficient use is made of the subconscious and prestige is attached to daring or psychological risk taking.

The fact that the creative achievements of the past have been accomplished by individuals and not by groups and that there is evidence to suggest that some creative individuals are introverted (e.g. Munsterberg and Mussen, 1953) cannot be denied. (cf. Guilford, 1967b.) On the other hand, no one would deny that "all individuals ... live in a social milieu, which must necessarily have effects on them as well as their affecting others within their reach. For these two reasons we are faced with problems of effects of social conditions

upon creative thinking." (Ibid. p. 445.)

Synectics makes a unique use of the group as an affector of creative production. The group is utilized as a significant aspect of the total situation. Individual members in fact alternate between active membership in the group and total removal from the group; the group is utilized as a pool of personality, social, emotional, and motivational factors with which individuals always maintain contact either in total immersion or on the fringes. In this sense the group is both essential and non-essential, but 'group-think' inapplicable to the Synectic approach.

V. CREATIVITY AS DIVERGENT PRODUCTION.

A. The Structure of Intellect. Before turning to a consideration of "Divergent Thinking," a word with respect to the overall picture of Guilford's work is in order. This work was carried out in connection with the Aptitudes Project and is discussed in the "Reports from the Psychological Laboratory of the University of Southern California." These thirty five reports span a period of 15 years from June, 1950 to June, 1965 and represent a central vein of Guilford's work over that period. The most comprehensive statement of the findings of this project can be found in The Nature of Human Intelligence (Guilford, 1967a). The theoretical model which has evolved from this project, The Structure of Intellect or SI Model, is explicated in Guilford (1967a and 1967b); a history of its evolution in Guilford and Merrifield (1960). In this section a brief statement with regard to the total model and the model as theory preceeds a discussion of divergent thinking.

1. The Structure of Intellect Model. The SI Model is based on the "three faces of intellect": the five kinds of operations involving four kinds of content and generating six kinds of products. The kinds of operations, contents, and products are summarized below along with the symbols used

to specify each. The general meanings of these classifiers is usually evident and specific definitions are stated where appropriate in later discussions.

- a. Operations: (C) Cognition
(M) Memory
(D) Divergent Production
(N) Convergent Production
(E) Evaluation
- b. Contents: (F) Figural
(S) Symbolic
(M) Semantic
(B) Behavioral
- c. Products: (U) Units
(C) Classes
(R) Relations
(S) Systems
(T) Transformations
(I) Implications

The model as a whole is represented in the form of a cube, the faces or dimensions of which specify operations, contents, and products. The cube can be divided into 120 sections (5 operations X 4 contents X 6 products) each of which can be represented by three letters and represents a mental ability factor. For example, Thurstone's (1938a) Word Fluency Factor (write all the words you can think of beginning with the let-

ter "r") is a measure of divergent operations on symbolic content yielding unitary products and loads on factor DSU.

2. The Model as Theory. "A model may be defined as a set of constructs specified in such a way that their formal connections are evident." (Guilford and Merrifield, 1960, p. 13.) The constructs in the SI Model are then, the cells of the three dimensional matrix. The formal connections are deducible from the classificatory variables of operation, content, and product. The three are formally independent and no combination of the three is excluded.

The criteria for the legitimate use of a model as theory include its ability to account for previous knowledge and its ability to generate new knowledge.

a. When Guilford first discussed the SI Model (Guilford, 1956a) some forty intellectual factors were known to exist. The model locates all of these as well as factors later discovered to have been present in the literature. (cf. Guilford, 1967a, p. 65.)

b. The heuristic value of the model is evidenced by the fact that to date (1967) some 82 factors have been demonstrated to exist out of the 120 which were hypothesized. (The

demonstration of all 24 hypothesized cognition abilities including the six involving behavioral content has vindicated the addition of behavioral content to the more traditional categories of symbolic, figural and semantic content.) The six factors involving divergent production of behavioral content have not been demonstrated.

B. "Divergent Thinking." "To date, the greatest number of relevant contributions and the most sustained enterprise with respect to the study of creative thinking have come from J.P. Guilford and his associates at the University of Southern California." (Torrance, 1964, p. 60.) A list of these associates would include R.C. Wilson, P.R. Christensen, D.J. Lewis, R.M. Berger, N.W. Kettner, J.W. Frick, P.R. Merrifield, R. Hoepfner, and others. The work of Guilford and his associates within the field of creativity is usually equated with divergent production. The fact that the more 'clearly recognized' factors of creativity (originality, fluency, flexibility, and elaboration) involve divergent production does not mean that these are the only significant factors in creative production.

While divergent production may be equated with creativity, this is not Guilford's position since he specifically includes aspects of convergent production and the evaluative abilities in his conceptualization of creative behavior.

"In recent months, however, there has been a growing realization that the redefinition abilities, which are in the convergent-production category of the structure of intellect, are also of much importance in creative thinking." (Guilford and Merrifield, 1960, p. 11.) Later, these authors also note that the factor known as "sensitivity to problems" (a hypothesized creativity factor) is an evaluative ability (Loc. cit.). They conclude, "Creative thinking, then cannot be allocated exclusively to any particular portion of the model." (Loc. cit.) All aspects of creative production are not accounted for by divergent production. The converse of this statement is considered later. (cf. p.266.)

C. Factors of Creativity. The principal factors of creativity are originality, fluency, flexibility, and elaboration. In fact, Guilford et. al. (1951) originally hypothesized nine factors and designed or adapted a number of tests for each. ~~Apart from those mentioned,~~ ^{indirect} Three others of interest ~~were~~ ^{are} Elaboration, Evaluation, and Sensitivity to Problems.

Tests of the evaluative factor were included in later studies (cf. Guilford et. al. 1952, 1953, 1954, 1956). The factor of elaboration was discovered in the series of "Planning" studies which were a part of the aptitudes project. (cf. Guilford et. al. 1954, 1955.) Sensitivity to Problems was also later integrated into the model. In the following discussion we shall consider the factors of originality, fluency, and flexibility.

In order to simplify and clarify the following discussion a number of points should be noted. Originality, fluency, and flexibility were originally hypothesized as factors of creative thinking. Later they were, with the exception of originality, found to represent many factors and these were integrated into the SI Model. Thus, there are in fact, five fluency factors which have been demonstrated and each is represented by a combination of three letters specifying their position within the model. A number of these factors were initially named (e.g. word fluency, ideational fluency, etc...) and have also retained their initial names. The factor of originality which also retains this name has been reinterpreted into the SI Model as the Divergent Production of Semantic Transformations (DMT) or semantic adaptive flexibility. (The rationale for this is given in Guilford, 1967b, p. 424.) The discussion of divergent production is concluded with a brief outline of the various Structure of Intellect factors represented by these

three general names. Those factors utilized in the empirical studies are further discussed in Chapter Six (cf. p.172#).

1. Originality. Initially (Guilford et. al., 1951) hypothesized originality as a factor in creativity. They suggested three ways in which originality could be determined: rating for cleverness, statistical infrequency of response (e.g. original uses for common objects), and requiring originality. An example of the latter can be seen as Spearman's "educing of correlates" or providing remote associations. Given the words 'paper' and 'mail' or 'paper', 'mail' and 'bag' the subject is required to find a connecting link. If he finds it his answer is original. In fact originality can be shown to involve a number of kinds of contents and products depending on the scoring method used, or the problems posed. Much of what was formerly called originality has been shown to involve the divergent production of semantic transformations. The Remote Associates Test and "educing of correlates" most probably involve a number of factors. (cf. Guilford, 1967b.)

2. Fluency. Fluency was originally (Guilford et. al. 1951) hypothesized to be an ability to call up a large number of ideas in a relatively short time. The authors expected to find more than one factor and originally found three (word fluency, ideational fluency, and associational fluency) though

two other factors (figural fluency and expressional fluency) have been demonstrated since.

a. Word Fluency . This factor is in fact Thurstone's (1938) factor of the same name. It involves the ability to produce words fulfilling certain structural requirements. Tests loading on this factor require subjects to produce as many words as possible beginning or ending with a given letter, prefix, or suffix. The factor is located within the SI Model as the divergent production of symbolic units (DSU).

b. Ideational Fluency. This factor is also one of the originally predicted fluency factors. "The ability involved here seems to be the speed of calling up ideas in a situation in which there is relatively little restriction, and quality does not matter." (Guilford et. al., 1952, p. 16.) The factor had already been isolated. (cf. Guilford, 1967a, p. 160.) Tests with a significant loading on this factor include "Plot Titles" (list as many titles as possible for a given plot) and the "Utility Test" (list as many uses as you can think of for a pencil, paper clip, etc...). The factor is located in the SI Model as the divergent production of semantic units (DMU).

c. Associational Fluency was latent in Thurstone's first major PMA analysis and reworking yielded it later. (cf. Guilford, 1967a) An example of a test loading significantly on this factor, "Controlled Associations", requires the subject to write as many synonyms for a number of words. The test therefore involves the divergent production of semantic relations (DMR).

d. Figural Fluency was predicted by the SI Model and demonstrated by Hoepfner and Guilford (1965). A test loading on this factor is "Make a Figure" (given three lines make as many figures as possible). The test involves the divergent production of figural units (DFU).

e. Expressional Fluency. The demonstration of this factor by Christensen and Guilford (1963) was unprecedented. The ability involved here is sentence construction. The factor is located in the model as the divergent production of semantic systems (DMS). A test loading on it requires that the subject, given the initial letter of four words, construct a sentence ("Four-Word Combinations FL").

3. Flexibility. Two kinds of flexibility were originally hypothesized and these hypotheses were unprecedented. (cf. Guilford, 1951.) Adaptive Flexibility is "a facility in change of set in doing simple, routine types of tasks..." (Ibid. p. 5). Spontaneous Flexibility is a general freedom from inertia. Two types of adaptive and three types of spontaneous flexibility have been demonstrated.

a. Figural Spontaneous Flexibility is tested by, for example, giving subjects a list of capital letters and asking them to arrange them into as many groups as possible on the basis of figural properties. The generation of solutions entails the divergent production of figural classes (DFC).

b. Symbolic Spontaneous Flexibility is identical to the above except that the content involved is symbolic (e.g. numbers). It is located within the model as the divergent production of symbolic classes (DSO).

c. Semantic Spontaneous Flexibility is the best known of the Spontaneous Flexibility factors. The Utility Test is scored for this factor by asking for a list of possible uses for common objects and ascertaining the number of classes of uses given. It involves the divergent production of

semantic classes (DMC).

d. Figural Adaptive Flexibility. This factor involves the divergent production of figural transformations (DFT). A test loading on it, "Match Problems II", requires that a subject, given a set of adjacent triangles and squares each line of which is composed of a match stick, take away a specified number of sticks and leave a specified number of figures.

e. Semantic Adaptive Flexibility. This factor is in fact a reinterpretation or interpolation of the originality factor into the SI Model. A test loading on it, "Riddles" (give clever solutions to riddles), requires the divergent production of semantic transformations (DMT). The best known tests loading on this factor are "Consequences" (list the remote in time consequences that would occur if people did not have to sleep) and "Plot Titles" (give clever titles for a short story).

CHAPTER FIVE : IMPLICATIONS

- I. THIS CHAPTER
- II. CREATIVITY, AUTHORITARIANISM, AND CONFORMITY
- III. CREATIVITY AND CATHOLICISM
- IV. CATHOLIC EDUCATION AND AUTHORITARIANISM

I. THIS CHAPTER.

A. An Overview. Given the antithesis of authoritarianism--conformity and creativity (cf. below), there are two general methods of approaching an understanding of these sets of variables.

1. One can examine individuals and observe the presence of factors associated with one set and the absence of those associated with the other.

2. One can examine a group demonstrably high (or low) on one set of variables. There are two conceptual frameworks within which this approach might be utilized:

- a. one might attempt to demonstrate the presence of factors antithetical to creative thinking or

- b. one might attempt to demonstrate the absence of factors necessary for creative thinking within a group of this sort.

This research is an attempt to approach an understanding of the antithesis between creativity and authoritarianism-conformity through a group known to evidence high authoritarianism-conformity and low creative productivity. Although an attempt is made to measure the presence of a specific antithetical factor in the members of this group, the principal goal of the research is to demonstrate the relative lack of mental ability factors important to creative thinking in members of that group.

The reasons for this emphasis on a group rather than on individuals and on the absence of critical factors for creative thinking rather than the presence of antithetical factors are as follows.

1. This is the direct approach to both an understanding of the antithesis and a particular set of social factors involved (cf. p. 4).

2. This approach is efficient. Just as one does not expect to find every factor antithetical to creativity present in an uncreative group, one does not expect to find every factor of importance to creative thinking absent within such a group. Yet given some knowledge of the specific factors relevant to divergent production, useful information can be

gleaned from both those present and those absent within an uncreative group.

3. While neither authoritarianism nor conformity are ^{single} ~~single factors~~ ^{is a syndrome} antithetical to creativity, we do have a knowledge of specific factors of creative thinking against some of which we can contrast these broader concepts.

B. Outline. The remainder of this chapter is divided into three parts. In the first of these the theoretical and empirical aspects of the relationship between authoritarianism-conformity and creativity are discussed. Special reference is made to this relationship in the educational context. In the second part of the chapter these considerations are brought to bear on the creative production and education of Roman Catholics. In the third, some discrepant findings are discussed.

II. CREATIVITY, AUTHORITARIANISM, AND CONFORMITY.

A. In General. In Chapter Three it was argued that conformity behavior is most advantageously viewed in terms of the interaction between personality and social aspects of situations. Stein (1953, p. 312) makes virtually the same point with regard to creative behavior. "To speak solely of the existence of the stresses and strains in the environment without due consideration of the individual, as some investigators do, or to deal primarily with the stresses and strains in the individual as other investigators do, is an arbitrary approach." It is clear that "aside from noting family influences, few students of originality have conceptualized the production of original responses as an interpersonal event." (Dentler and Mackler, 1964, p. 2.) In considering the relationship of conformity and authoritarianism to creativity, both environmental and individual factors must be considered. The fact that Dentler and Mackler (1964) were able to obtain three times the number of original responses in a group operating under psychologically 'safe' conditions as opposed to groups operating in routine, indifferent, and psychologically 'unsafe' conditions lends further support to this view.

Conformity and authoritarianism as either personal or situational factors are inhibitors of creative behavior. The support for this statement is quite straightforward in terms of the concept of conformity and widespread though usually more specific than the broader concept of authoritarianism. Torrance (1964, p. 116) states, "Pressures towards conformity have been named by a number of observers and groups as a major inhibitor of creativity." Anderson (1959, p. 138) maintains that "conformity is a degradation of the quality of behavior, the uncreative stifling of spontaneity." With respect to authoritarianism, this author contends, "All uses of force, coercion, domination, shame, blame, guilt have one effect: the stifling of the creative process, the annihilation of originality." (Ibid. p. 131.) Both Guilford (1965, 1967b) and Rogers (1959) stress the importance of avoiding or postponing external evaluation in order to facilitate creativity. This approach is central to the Osborn (1957) and Gordon (1961) methods of creative problem solving. Argyle (1958, p. 96) states, "It is possible that people taught to accept traditional ideas on authority do not easily become innovators or research workers." Schafer (1958) emphasizes moderate as opposed to severe super-ego pressures as an antecedent condition of the ability to regress in the service of the ego. Rokeach (1960), Hilgard (1964), Guilford (1961), and Torrance (1963) all provide additional support for the antithesis of conformity

or authoritarianism and creativity. Of course, none of this implies that creative thinkers are likely to be moral non-conformists. (cf. Merrifield et. al., 1961) In fact, the hypothesis that creativity is founded on an attitude of unconventionality is not supported (cf. Guilford, 1959).

B. Empirical Findings. Although a number of authors have dealt with the relationship of aspects of conformity or authoritarianism and creativity, Barron has made the most systematic attack on the problem to date. He has conducted a number of studies into the relationship of originality and independence of judgment and other factors related to conformity and authoritarianism. (cf. Barron 1952, 1952-3, 1955, 1956-7; Barron and Welsh, 1952.) The general findings of these studies are summarized in Creativity and Psychological Health (Barron, 1963). This discussion roughly follows that summary.

Barron (1952-3) attempted to isolate personality correlates of independence of judgement. Using the standard Asch Test with 20 year old college students as subjects, he selected the upper and lower quartiles ($N = 92$) as the groups for comparison. He then asked all subjects in the two groups to check the adjectives (Gough Adjective Check List) which they

thought applied to themselves. Item analysis determined that the following adjectives were checked significantly ($p < .01$) more often by subjects who did not yield in the Asch situation: artistic, emotional, original. There were over 30 adjectives which distinguished the two groups at a significant level ($p < .05$). On the basis of these Barron states, "The self-descriptions of the Independents seem to involve ... a certain positive valuation of intellect and cognitive originality, as well as a spirit of open-mindedness...." (Ibid., p. 172.)

Asch and Barron, on the basis of these results and intuition, designed a questionnaire composed of items "culled" from a number of sources including the Ethnocentrism, Pre-Fascism, and Political and Economic Conservatism Scales. Again significant ($p .01$) differences were found between independents and yielders in the Asch situation. The independents were characterized on the basis of this scale as valuing creativity, receptive to new ideas, and interested in the original aspects of ideas. The responses of the independents (in parenthesis) to the following items among others distinguished them from the yielders at the indicated levels of significance:

p<.01: "What the youth needs is strict discipline, rugged determination, and the will to work for family and country." (False)

"Some of my friends think that my ideas are impractical, if not a bit wild." (True)

p<.05: "What this country needs most, more than laws and political programs, is a few courageous, timeless, devoted leaders in whom the people can put their faith." (False)

"I like to fool around with new ideas even if later they turn out to be a total waste of time." (True)

"Science should have as much to say about moral values as religion does." (True)

"It is easy for me to take orders and do what I'm told." (False)
(Ibid. p. 177-178.)

Using the Welsh Figure Preference Test in earlier studies (e.g. Barron, 1952), it was determined that "a liking for the complex figures is related negatively to rigidity, constriction, social conformity, subservience to authority, politico-

economic conservatism, and ethnocentrism; it is related positively however, to originality, verbal fluency, expression as opposed to repression of impulse, and to cathection of intellectual activity." (Barron, 1963, p. 175.) Barron determined that independence of judgment in the Asch situation must be included in this constellation of factors associated with a preference for complex figures. (Ibid. p. 175-176.)

Using a revised form of the Welsh Figure Preference Test (The Barron-Welsh Art Scale or Revised Art Scale; cf. Barron, 1952) Barron (1963) distinguished two groups: one preferring simple balanced figures (Group S) and one preferring the complex, unbalanced figures (Group A) as did artists in the validation of the scale. The author then presented all subjects with 105 post card reproductions of famous paintings. Group S preferred paintings involving religion, authority, aristocracy and good breeding while rejecting those involving the daring, esoteric, and sensual. Group A approved "the modern, the radically experimental, the primitive and sensual, while disliking what is religious, aristocratic, traditional, and emotionally controlled." (Barron, 1963, p. 187.) Preference for simplicity on this scale was shown to be related to repressive over-control; preference for complexity to originality. (Ibid. pp. 192-193.) The authors also found, on the basis of an attitude questionnaire, that "preference for simplicity is

associated with social conformity, respect for custom and ceremony, friendliness toward tradition, somewhat categorical moral judgment, an undeviating patriotism and suppression of such troublesome new forces as inventions that could temporarily cause unemployment.... Complexity goes along with artistic interests, unconventionality, political radicalism, high valuation of creativity (even at the expense of 'normality' as the item puts it), and a liking for change." (Barron, 1963, pp. 195-197.)

In still another study Barron demonstrated that original subjects (as determined by three of the Guilford measures of originality and five other tests) were independent in the Crutchfield situation and were rated highly independent on the Independence of Judgment Scale. A considerable body of evidence also indicated that the original person rejects suppression as a mechanism for the control of impulse. Finally, Barron reports these Q sorts as discriminating low original from high original subjects at the indicated levels of significance.

p.<.001: "Conforming; tends to do things that are prescribed."

p <.01: "With respect to authority, is submissive, compliant, and overly accepting."

"Lacks confidence in self."

"Is rigid, inflexible."

"Is suggestible."

All of these studies indicate the general antithesis of authoritarianism-conformity and creativity. Crutchfield (1955) offers substantial support of these findings with results obtained by comparing the conformity scores of high and low creative industrial scientists, female college seniors, and architects.

C: With Reference to Education. Since creativity can be modified in a positive or negative direction by environmental influences, it is not surprising that "the most concentrated indoctrinating agency of our culture: the school system" (Gruen, undated) is probably the most frequently indicted modifier of creative behavior. Rogers (1959, p. 69), for example, states that "in education we tend to turn out conformists, stereotypes, individuals whose education is 'completed', rather than freely creative and original thinkers." McPherson (1964, p. 131), among others, echoes this position,

"...it seems that most adults reach maturity with much of their creative potential buried as a result of educational and social experience." Indictments of education usually point to the conformity inducing and authoritarian atmosphere of the educational situation. The problem stems from the equating of equality and sameness. "Today equality means sameness. It means not to be different from the herd, and the general fear is that differences would threaten equality." (Fromm, 1964, pp. 52-53.) A universal characteristic of creativity is, obviously, difference.

There are practical considerations necessarily involved with creativity in education, but from a purely logical standpoint, "However justified conformity may be in a given situation, it is not harmony; it is not creative; it is not growth." (Anderson, 1959, p. 138.) The resolution of the conflict must be in the form of a compromise between the practical requirements of virtually universal education and the logical implications of environmental influences on creativity. The fact that evaluation may, if too soon or too much, have a detrimental effect on creativity or that children may develop an early preference for learning by authority (Torrance, 1965), must be viewed in light of the fact that evaluation and authority are, given the present system, necessary.

Attention must also be directed toward the broader aspects of education. For example, does the culture tolerate deviation from the traditional, the status quo, or does it insist upon conformity, whether in politics, science, or at school? Does the culture permit the individual to seek new experiences on his own, or do the bearers of culture (parents, teachers and so on) 'spoon-feed' the young so that they constantly find ready made solutions available to them? (Stein, 1953, p. 319.)

The following section of this chapter represents an attempt to appreciate some of the questions posed here by Stein.

III. CREATIVITY AND CATHOLICISM.

A. The Creative Production of Roman Catholics. In Chapter Two a large number of studies were cited suggesting the high degree of authoritarianism in Roman Catholics. There are also a number of studies evidencing high prestige suggestibility and social acquiescence as characteristic of this group (cf. Argyle, 1958; Pallone, 1964). The absence of Catholics from the areas of endeavor placing a premium on creativity has often been noted. The ratio of Catholics listed in Who's Who (1931) to total membership was the lowest (0.13) of the thirteen denominational groupings listed by Frye (1933) (cf. Argyle, 1958). Knapp and Goodrich (1952) and Knapp and Greenbaum (1953), in their studies of the origins of American scientists and American scholars respectively, found that Catholics were disproportionately under-represented. Meng (1957, p. 114) in a paper entitled, "American Thought: Contributions of Catholic Thought and Thinkers" writes, "There are relatively few Catholics in positions of intellectual leadership in America outside of Catholic circles...." This author cites Brogan's (1941) statement as support for his opinion of the situation, "...in no Western society is the intellectual prestige of Catholicism lower than in the country where, in such respects as wealth, numbers and strength of organization it is so powerful." (cf. Meng, 1957, p. 113.)

Lieberman (1960) after discussing the amount of educational research generated by the system draws the same conclusion - under-representation. The implication of this survey is most cogently stated by O'Dea (1958, pp. 158-159), "Authoritarianism is one of the several factors which inhibit the development of mature intellectual activity in the American Catholic." (cf. Fox, 1965, p. 273.)

B. Qualifications. At this point a number of apparently equivocating facts should be considered. There is evidence to suggest that Catholics as a group rank extremely low in relation to other churches or denominations in terms of IQ (Pratt, 1937) and socio-economic status (Argyle, 1958). However, in the next section of this chapter a large body of evidence is reviewed which implicitly or explicitly posits Catholic education as the responsible factor for the low creativity and high authoritarianism within this group. Low IQ and socio-economic status do not apply to Catholic school pupils. American Catholic education is private. In addition to paying for public education, American Catholics pay fees for Catholic education. In public schools there are no fees (beyond State Tax). There is a certain amount of selection inherent in this sort of system - at least as far as: which

Catholics go to Catholic schools. Selective admission to Catholic schools is further necessitated by an enrollment growth of 129% since 1945. Apart from the ability to pay fees, IQ is (for our purposes) the most important selection factor. This is reflected by the fact that Nuwien (1966), in a vast survey involving 92% of the Catholic primary and 84% of the Catholic secondary schools in the U.S., found the average IQ in the Catholic system to be 109 as opposed to the national average of 100. Studies discussed in the following section indicate that this IQ differential is not the result of Catholic education.

IV. CATHOLIC EDUCATION AND AUTHORITARIANISM.

A. The Education of Eminent Catholics. The higher IQ of Catholic students in Catholic schools and the low creative production of Catholics in general, would seem to suggest Catholic education as a causal factor. A number of studies of prominent Catholics suggest the same conclusion. Meng (1957) for example, surveyed the educational background of the 114 most eminent lay teachers in the U.S. (members of the Catholic Commission on Educational Affairs). Membership on this commission "was highly selective and rigidly controlled to insure the inclusion only of individuals of proven ability and established reputation in their professional fields. Particular efforts were made to seek out Catholics working in Non-Catholic institutions and activities, although the best scholars in strictly Catholic areas were also included." (Ibid. p. 114.) Over 64% of these eminent Catholics received no part of their higher education in Catholic colleges or universities. "Only 28% were trained even partially under Catholic auspices. Catholic colleges and universities employed a larger number whose training was wholly Non-Catholic than they did whose training was even partially Catholic." (Ibid. pp. 114-115.) He concluded that there were far too few able Catholic intellectuals. Those who did command the respect of their American colleagues "do not come from Catholic colleges or universities." (loc. cit.)

B. Differences. A very small number of studies have been conducted directly or indirectly comparing Catholics in Catholic schools with Protestants in Non-Catholic schools on a variety of criteria. On the college level Fox (1965) found highly significant differences between carefully matched samples of these two groups in authoritarianism. Within the Catholic college community he also found that "those students who had attended Catholic elementary and secondary schools were significantly more authoritarian than those who attended public schools." (Ibid. p. 273.) Koos (1931) compared the scholastic achievement of the two groups and found the Catholic school graduates lacking, in spite of their higher IQ, in this case also. (cf. Hill, 1961.) Hill demonstrated the same finding with scholastic aptitude controlled. (ibid.). Similar findings were reported on the secondary school level by Hill (1957).

Quin (1965) conducted one of the most recent and the most directly applicable study in the literature. He set out to isolate possible etiological factors responsible for the poor showing of Catholics in general and the graduates of Catholic schools in particular. He hypothesized that two of these factors might be critical thinking and open-mindedness. He attempted to determine this by comparing:

- a. Catholics attending Catholic schools,
- b. Catholics attending public schools, and
- c. Protestants attending public schools. ("Public school" is not used herein to refer to private school.)

His instruments were the Dogmatism Scale, Form E and the Watson - Glaser Critical Thinking Appraisal, Form A. He found that the three groups could be thought of as falling on a continuum if they were represented by their scores on the Dogmatism Scale. There were statistically significant differences occurring in each of the three possible combinations of groups. Catholics in Catholic schools were found to be the most authoritarian, generally intolerant and closed-minded of the three groups; Catholics in public schools significantly less so and Protestants in public schools the least dogmatic. His findings were duplicated for critical thinking with the exception that Catholics in Catholic schools were not significantly different from Catholics in public schools. Quin concluded, "The most significant single finding in this investigation is the great divergence of the parochial high-school seniors from the public high-school seniors in mean score on the test of open-mindedness ... education in a parochial secondary school is the single most salient factor in developing closed-mindedness." (Ibid. p. 28.) A further passage from this article is particularly relevant.

The results indicating the relative closed-mindedness of Catholics may provide some explanation for the relatively poor showing of Catholics in the areas of scholarship, research, and the attainment of intellectual eminence. The poor showing of otherwise intelligent Catholics in such areas might be partially explained by the tendency toward closedmindedness. Latent abilities may never be actualized because of the short-circuiting effects of closedmindedness. (Quin, 1965, p. 29.)

It is suggested herein that creativity is as relevant to this causation as dogmatism, authoritarianism and conformity; and that religious education in general rather than Catholic education in particular also plays an important role.

C. Discrepancies. There are a number of aspects of the literatures discussed which deserve special mention (a) the general relationship of religion to creativity and (b) some aspects of social acquiescence in Catholic as opposed to Protestant pupils. These will be stated in this section and empirical resolution attempted as a part of the general experiments reported in the next chapters.

1. Clark (1963) maintains a position regarding religion and creativity which accounts for the findings with respect to the Roman Church. His argument is as follows (cf. Clark, 1963): Visher (1925) in a survey of Who's Who in America found that subjects listed came from ministers' families two times as often as professional families in general. These findings were supported by a later study by Huntington and Whitney (1927). Clark hypothesized that a "religious motive in some form" was involved in the eminence of these men. In an earlier study Clark (1955) found that "the more eminent group did rate themselves as having a greater disposition to question religious beliefs." (Clark, 1963, p. 134).

Clark (1963) selected (on the basis of sufficient information) the 30 most eminent Catholic writers since 1500 A.D. from a compendium of that title. He found that, of these thirty, "two thirds of the sample were converts, while some measure of dissent from authoritative views was indicated for eleven or one third of the group". (Ibid. p. 135.) He concluded, "... it would seem at least a likely surmise that tension between faith and skepticism, between authority and private judgement, constituted a force that helped to mediate the creative products and achievements of

a literary variety." (Loc. cit.)

Two important implications of this view are worth noting.

a. In the Allport⁽¹⁹⁴⁸⁾ study cited earlier (cf. p.22) the finding with college students was that "the majority report a definite rebellion against parental teaching - less frequently however, in the case of Roman Catholics, than in the case of Protestants and Jews." (Allport et. al. 1948). These authors also report that 50 percent of the subjects had left the parental faith though the rate of apostasy for Catholics was only 15 percent for men and zero for women.

The Allport findings may indicate that Catholics evidence less rebellion against parental religious views than Protestants. Clark's (1963) thesis of a tension between faith and skepticism facilitating creativity is supported by these findings. If one is prepared to accept the thesis that religion plays a role in influencing creativity one must ask the next logical question - a facilitating or inhibiting role? These findings also permit one to argue that those who do not rebel against the religious views of their parents (e.g. Roman Catholics) are less creative than those

who do (e.g. Protestants). The validity of this argument is demonstrated herein.

b. In terms of previous considerations one might also ask whether it is Catholic education in particular or religious education in general which has a negative effect on creative production.

2. A second study (Hyman and Stephens, 1965) is worth mention here. The results of this study would appear to be contradictory to those of Quin (1965). These authors compared Catholics in Catholic schools with Protestants in public schools on the basis of persuasibility. Persuasibility is a person's readiness to accept social influence from others irrespective of what he knows about the communicator or what the communicator is maintaining. It is a generalizeable tendency. (cf. Hovland and Janis, 1955). Therefore, Hyman and Stephens hypothesized that the authoritative leadership of the Catholic Church in the areas of faith and morals would be generalized to other areas and Catholics in Catholic schools would be more persuasible than Protestants in public schools. In fact they found no differences between the two groups in terms of persuasibility. (They did find differences between the groups with respect to IQ and

persuasibility which are discussed in the next chapters.)

a. Is this study contradictory to the Quin (1965) dogmatism study? Apart from the problems discussed with regard to studies of social acquiescence, it would seem to be so on a theoretical level. "Open-minded individuals are better able to distinguish between and evaluate independently the content of a message than are closed individuals Closed individuals may be more responsive to group influences than are open individuals." (Powell, 1962.) Rokeach (1961) relates authoritarianism to conformity by defining the latter as dependence on the authority of the group.

b. A modification of the test used by Hyman and Stephens was constructed and employed herein with the objects of (i) determining if this sort of instrument could differentiate these two groups and (ii) if so, accounting for their failure to do so on the basis of the impersonality of the variation they utilized.

SECTION II. THE EMPIRICAL STUDIES

CHAPTER SIX : HYPOTHESIS, SUBJECTS AND SAMPLES,
PROCEDURES

CHAPTER SEVEN : RESULTS

CHAPTER EIGHT : DISCUSSION AND CONCLUSIONS

CHAPTER SIX: HYPOTHESES, SUBJECTS AND SAMPLES, PROCEDURES

I. GENERAL HYPOTHESES

- A. Outline.
- B. Rationale and Tests of the Basic Hypotheses.

II. EXPERIMENTAL HYPOTHESES

- A. Nationality vs. Religious Affiliation.
- B. Religious Affiliation vs. Type of School.
- C. Further Comparison.

III. SAMPLES, SUBJECTS and ADMINISTRATIVE PROCEDURES

- A. The American Samples.
- B. The National Samples.

This chapter is divided into three parts. In the first part the six experimental hypotheses (1 - 6) of the cross-national study are stated individually as well as the test of each and two tables of results for each. This is followed in each case by the conclusions drawn from these results. The same procedure is followed for the six hypotheses (7 - 12) of the American study. In the third section the supplementary observations are considered.

I. HYPOTHESES.

A. The basic hypothesis of the studies reported herein is that Catholic pupils will be less creative and more conforming than Protestant pupils. The rationale for this hypothesis stems from the literatures considered in the preceeding chapters. It is essentially that the social and personality factors associated with creative behavior are antithetical to those associated with authoritarian or conformity behavior (cf. Crutchfield, 1962). Furthermore, it is assumed that, given the appropriate instruments, ^{it is} measuring the absence of the particular factors important in creative thinking, ^{values} is more direct than demonstrating the ^{is} presence of a variety of antithetical factors within a particular group.

The various factors of creativity are kept separate throughout this report for two reasons. First, there is little justification for combining sub-scores into a gross "creativity" score and second, doing so has no significant effect on the predictive ability of these tests (cf. Yamamoto, 1964a). On the other hand, while in fact only one aspect of conformity is specifically tested, the two (and sometimes three) groups tested are distinguishable on the basis of

their over-all religious conservatism, authoritarianism and conformity. In this sense it is the syndrome rather than the symptom which is observed.

In this chapter the specific hypothesis and more general questions with which the study is concerned are set forth, along with the tests chosen to disprove their respective converses. In addition to these the characteristics of the particular samples and sub-samples to whom these tests were administered are described. At the end of this chapter a table symbolizing the various hypotheses and tests is presented. In the following chapter the results of these tests are analyzed and conclusion drawn with respect to the factors they measure.

B. There are six basic hypotheses concerning the six variables of the study. The rationale of these hypotheses is also described here. Although there are in fact six variables (originality, ideational fluency, word fluency, spontaneous flexibility, adaptive flexibility, and conformity) rationales are stated in terms of fluency, flexibility, originality and conformity.

1. Originality. It is hypothesized that Catholic pupils will evidence less originality than Protestant. Originality is probably the single most salient component of the creative act. We have seen that originality is associated with open-mindedness, independence of judgment and unconventionality (cf. Barron, 1963). Therefore it is expected that a group demonstrably more closedminded (cf. Quin, 1965), subject to social pressure (cf. Pallone, 1962), and conventional (cf. Allport et. al., 1948) will be less original than a group evidencing relatively less negative concomitance with this factor. Furthermore, given the appropriate measure, rather than demonstrating the presence of variables antithetical to originality, one should be able to demonstrate a low degree of the particular factor in question.

The general types of originality test were described in Chapter Four. The particular test used here determines originality on the basis of statistical infrequency of response. The less frequent a particular response the greater its weight and the sum of weights for all responses represents the score for this factor. The Utility Test (given five common objects, list different uses for each) was the stimulus material used. The subjects were given 20 minutes to list as many responses as possible to the five

items. The scoring has been described; however, there are a number of possible referents with which to determine statistical infrequency. In this case the norms were established separately within each country. Thus a particular response to the word "pencil" might be heavily weighted in one country (statistically infrequent in that country) and not weighted at all in another (statistically frequent in that country). The weights were assigned as follows:

responses occurring in less than 10% of the subjects received a weight of 1;

responses occurring in less than 5% of the subjects received a weight of 2;

responses occurring only once received a weight of three; and

all other responses a weight of 0.

The weights were then summed for each item and over the five. The originality score was probably least effected by cultural differences.

2. Fluency. Catholic pupils will evidence less ideational fluency and word fluency than Protestant pupils.

Fluency is a purely quantitative measure of the number of ideas which are called up per unit time. Its particular relevance as a factor of divergent thinking stems from the fact that "voluminous productivity is the rule and not the exception among individuals who have made some noteworthy contribution." (cf. Barron, 1955). One expects a free flow of ideas to be associated with an ability to regress in the service of the ego. (cf. Schiller's remark quoted on p.102.) We have seen that adaptive regression is dissociated from severe super-ego pressures (cf. Schafer, 1958) and repressive over-control (cf. Pine and Holt, 1960). Coincidentally, one expects that this ability is antithetical to hypercriticality and dependence on external sources of evaluation (cf. Guilford, 1967b). Yet, again these characteristics are associated with authoritarianism, conventionalism, and religious conservatism each demonstrable in the group Roman Catholics. As with originality, demonstrating the presence of factors and characteristics antithetical to fluency is an indirect explanation at best. Demonstrating the absence of an important factor of creative thinking is the most explicit explanation of a lack of creativity.

Two tests of fluency have been utilized. Ideational fluency is the ability to call up ideas in a relatively unrestricted situation with no concern for quality. The stimulus involved for testing this factor was the Utility Test scored for total number of responses. That is the sums of responses for each item were summed over the five items. The factor is located within the Structure of Intellect model as the Divergent Production of Semantic Units. The test measuring it defines class properties and requires the listing of class members. The content involved is meaningful (semantic) and the products unitary.

The second test (Word Fluency) involves the divergent production of symbolic units. Accordingly this test requires "generating words, as letter patterns, from memory storage to fulfill certain class requirements." (Guilford, 1967a, p. 141). The fact that this factor requires the generation of words as letter patterns irrespective of meaning distinguished it from ideational fluency which requires the generation of words as meanings and thus involves semantic content. The test of this factor required subjects to write as many words as possible beginning with a given letter. Subjects were given five minutes to do so. The score was simply total number of words written. Guilford (loc. cit.)

de-emphasizes the importance of this factor in creative fluency. It might also be noted that "word" fluency is a misnomer since the divergent production of any kind of symbolic units is the definition of the factor. Thus words, numbers, or signs might be the type of units produced.

3. Flexibility. It is hypothesized that Catholics will evidence less flexibility than Protestants. Flexibility is the ability to shift classes of response. As such it is indicative of a freedom from momentum in contrast to fluency, a freedom from inertia. Because authoritarianism is partially defined as "the disposition to think in rigid categories" (cf. p.84) and associated with emotional constriction, lack of spontaneity and repression of impulse (Barron, 1963) one expects a group exhibiting authoritarianism to be less flexible than a relatively antipathic group.

Two tests of this factor were employed; one for each of two kinds of flexibility. Spontaneous Flexibility, the divergent production of semantic classes, was measured by the Utility Test. It was scored for this factor by determining the number of classes of responses for each stimulus and summing over the five stimuli.

The second test employed was Word Association. This test requires the subject to list as many different meanings or uses as he can think of for each of twenty-five words. In fact synonyms, words, or short phrases were called for and each of these connoting a different use or meaning of the stimulus was counted. Thus "party", "many", and "communion" would have been acceptable responses to the word host except that this word was excluded from the list in scoring because of its particular significance for Catholics. This test was used by Getzelis and Jackson and does not fit neatly into the Structure of Intellect Model. It does involve the divergent production of semantic classes but this factor is termed spontaneous flexibility. The responses here are clearly not unrestricted. A similar factor termed Adaptive Flexibility within the SI Model requires subjects to change courses within a given frame work in order to produce relevant solutions but this involves figural materials. The term semantic adaptive flexibility (cf. p.44) might be applied except that Guilford does not list this test as having a significant loading on that factor. In fact, the test probably taps a number of factors including vocabulary. As might be expected, it correlated positively (.378 for males and .371 for females) with intelligence in the Getzelis and Jackson study. This was a relatively high correlation.

It might be compared with the correlations of the Utility Test and IQ which were .176 for males and .146 for females.

4. Conformity. It is hypothesized that Catholic pupils will evidence more conformity than Protestant pupils. Persuasibility has been defined as an individual's disposition to accept social influence irrespective of what he knows about the source of the influence or what that source is advocating. It is essentially acquiescence without face to face interaction and public response. Hyman and Stephens (1965) gave their subjects a 45 item, 7 point attitude scale.

Example: Hollywood motion pictures of novels or plays are usually as good as the originals.

<input type="checkbox"/> Agree Strongly	<input type="checkbox"/> Agree Moderately
<input type="checkbox"/> Agree Slightly	<input type="checkbox"/> Undecided
<input type="checkbox"/> Disagree Slightly	<input type="checkbox"/> Disagree Moderately
<input type="checkbox"/> Disagree Strongly.	

Twenty-one days later critical subjects were given the same scale with the majority opinion marked in. On certain items a false majority opinion was marked; on others the true majority opinion. Control subjects were given the same scale with no majority opinions marked in. The magnitude and

direction of opinion change was algebraically summed for the critical subjects to yield a persuasibility score. These authors found no differences between Catholics in Catholic schools and Protestants in public (state supported) schools. Although IQ differences were not significant, the Catholic experimental group had a mean IQ of 118.5 while the public school experimental group had a mean IQ of 113.9 (Henmon-Nelson Test of Mental Ability, Revised Edition, Level 9-12).

This test, as described and administered, is clearly different from those discussed in Chapter Four. Its principal disadvantages are the absence of face to face interaction and the elimination of public response. The principal advantages are the relevance of the stimuli and its amenability to a detailed analysis of movement and congruence. A modification of this test was designed with the aim of incorporating its advantages and eliminating its impersonality. The modification is in fact a 'conformity' rather than a 'persuasibility' measure.

We accepted the "disposition to accept social influence" as the basis of the test. However, in accordance with the considerations of Chapter Four, a test was designed which (a) allowed relevant or potentially relevant stimuli,

(b) permitted the interaction of both social and personality factors, and (c) provided a means of assessing movement both to and from the group. In terms of relevant stimuli, simple problem situations were used. Each problem had four possible solutions which were to be rank ordered. The following is an example adapted from Getzelis and Jackson (1962).

Robert has two important tests to take next week. One is in arithmetic and the other is in science. He likes science better and he is anxious to get a good mark in it. He would like to do well in both. So far this year he has done very well in science and not so well in arithmetic. He doesn't have time to study really well for both arithmetic and science. WHAT SHOULD HE DO?

- ___A. Study science because he likes it better.
- ___B. Study mostly arithmetic because he knows he's not as good in arithmetic as he is in science.
- ___C. Study them equally because they are both important.
- ___D. Ask the teacher to give one of the tests a week later.

PUT A 1 NEXT TO THE ANSWER YOU THINK IS BEST, A 2 NEXT TO THE SECOND BEST, AND SO ON.

Following this individual administration, subjects were assigned to groups composed of between four and six members.

They were asked to read out each problem, discuss the relative merits of the four solutions and vote on a group rank order determined by simple majority. This single group rank order was entered on the sheet which each member signed. At the end of the testing session it was "discovered" that a number of subjects had misunderstood the instructions but that every group had followed them correctly. The instructions were repeated and subjects asked to fill in what they thought was the best rank order. It was implied that the original tests (i.e. the first individual administration) would be thrown away. After these were collected, subjects ^(ie informed about the purpose and method of the experiment) were completely debriefed. In this manner pre and post group influence, rank orders could be compared. When a given subject changed rank orders from the first to the third administration it was determined whether these changes were to or from the direction of the group rank order. If he responded consistently it could be determined if he did so by agreeing or disagreeing with the group on 'pre' and 'post' trials.

This test is in fact the converse of the Hyman and Stephens persuasibility test. While still measuring social influence it does so (a) because of what the subject knows about the communicator (the other subjects) and

(b) because of what the communicator is advocating. The subjects are members of the groups in which they debate - members in an obvious sense of a 'real' group. They voted publicly in front of the group. Obviously there are weaknesses with this sort of unstructured test. Principally, we have no way of knowing which groups had a unanimous majority and which a minimal majority. Secondly, there is no way of controlling for the content of the various groups in terms of for example, prestige. However, it was felt that the reality of the situation and the ability to analyze kinds of changes or lack of change over-rode these disadvantages. In terms of reality it was quite evident that given virtually no supervision (the experimenter was usually in the room reading a book but overlooked no particular group except to insure they were debating the problem) the subjects inevitably spent the 15 to 20 minutes in active (often overactive), interested argument.

II. EXPERIMENTAL HYPOTHESES.

A. In the preceding section of this chapter the rationale and the tests of the four general hypotheses of the research were presented. In fact these represent six specific experimental hypotheses, one for each factor tested: originality, ideational fluency, spontaneous flexibility, adaptive flexibility, word fluency and conformity. It has been hypothesized that in each case Catholic pupils will score in the direction indicating less creativity and more conformity when compared to Protestant pupils.

A great deal of the preceding is based on the literatures of religion, conformity and creativity as they apply to a particular religious subculture, Roman Catholicism, within the context of the broader "core-culture" of the United States. This religious subculture and that with which we are comparing it, Protestantism, can both be observed within a wide variety of contexts. One expects a certain amount of continuity between subcultures despite their contexts - particularly when they are broadly defined along relatively culture-free dimensions. The first six experimental hypotheses are then, that Catholic and Protestant pupils

will score in the indicated directions in each of the four countries concerned.

Catholic pupils will evidence:

1. less originality,
2. less ideational fluency,
3. less spontaneous flexibility,
4. less adaptive flexibility,
5. less word fluency, and
6. more conformity

than Protestant pupils in the United States, Northern Ireland, Eire, and Scotland.

The situation with respect to the authoritarianism and conformity of Roman Catholics has or is predicted to have certain effects on the manifest and latent or potential creativity of members of that group within the United States. In terms of manifest creativity the point has been made (cf. p.154) that the creative production of American Roman Catholics is disproportionately low. It has been predicted that performance on tests of selected factors of divergent production will reflect this in a much younger group of Roman Catholics in the United States. The question arises as to the proportionate production and performance of similar groups.

within the Catholic subcultures of other countries.

These other countries are Northern Ireland, Eire and Scotland. With respect to Great Britain the creative production of Roman Catholics is disproportionately low - as in the United States. Scott (1967) came to the same conclusions as the American authors (cf. 157) with respect to the numbers of Catholics in the areas placing a premium on scholarship, research, intellectual eminence and others in Great Britain. This leads one to expect a low performance on tests designed to measure factors of creative thinking in younger members of the same sub-culture.

Furthermore, one expects that these differences are an effect of the very nature of Roman Catholicism rather than an effect of the particular context in which it exists. That is the authoritative approach of the Roman Church to particular areas of religion represents its unique feature wherever it exists. Obviously one expects differences in different cultures but given this authoritative approach in these particular countries, one expects Catholic students to be less creative than students subjected to a less authoritative approach.

B. A further set of questions arises with regard to the effect of educational influences on aspects of creativity. Quin (1965) found that Catholic education was the single most salient factor in producing the differences he found between Catholics attending Catholic schools, Catholics attending public schools and Protestants attending public schools. He found significant differences between all three groups in dogmatism. Will these same groups reflect similar differences on selected factors of creativity? That is, if there are no differences between Catholics in Catholic schools and Catholics in public schools but these groups both differ from Protestants in public schools the findings would hardly indict Catholic education. On the other hand if the only differences are on the basis of kind of school, then this would indict Catholic education. In light of preceding considerations the following experimental hypotheses were made with respect to the situation in the United States.

Catholics in Catholic schools will evidence less

7. originality,
8. ideational fluency,
9. spontaneous flexibility,
10. 'adaptive flexibility',

11. word fluency, and

12. more conformity

than Catholics in public schools who will in turn evidence the same relationship to Protestant students in public schools. (A separate analysis including a sample of Catholics attending public schools was conducted to test these hypotheses.)

C. Finally, assuming there are differences between Catholic and Protestant pupils and that these differences will vary between countries, a further question can be asked with respect to the results. It is hypothesized that the differences between Catholic and Protestant pupils will be greater in the United States than in Northern Ireland, Eire or Scotland. The rationale of this hypothesis is simply that it is the religious conservatism of the Roman Church rather than some unique characteristic of that Church (e.g. papal infallibility) which leads to the relatively high authoritarianism-conformity and relatively low creativity of its members as a group when compared to Protestants in the broadest sense. Whether or not the results of this religious conservatism and its correlates are a function of

Catholic educational influences will be determined by hypotheses 7 - 11. However, in the U.S. the contrast is between conservative religious education and no religious education while in Northern Ireland, Eire, and Scotland the contrast is between very conservative religious education and relatively conservative religious education. It is hypothesized that this will be the principal reason for greater differences between the two groups in the U.S. By comparing the differences between the two groups within the various countries we shall in fact be observing the differential effects of the various cultures on several factors of creativity and a test of conformity in Catholics and Protestants.

ABBREVIATIONS

Factors

O Originality
IF ... Ideational Fluency
SX ... Spontaneous Flexibility
AX ... Adaptive Flexibility or Word Association
WF ... Word Fluency
C Conformity

Samples

C Catholics
P Protestants
CC ... Catholics in Catholic schools
CP ... Catholics in public schools
PP ... Protestants in public schools
US ... United States
NI ... Northern Ireland
I Eire
S Scotland

SUMMARY OF THE EXPERIMENTAL HYPOTHESES

The Cross National Study

1. O: C < P in US, NI, I, S
2. IF: C < P in US, NI, I, S
3. SX: C < P in US, NI, I, S
4. AX: C < P in US, NI, I, S
5. WF: C < P in US, NI, I, S
6. C: C < P in US, NI, I, S

The American Study

7. O: CC < CP < PP
8. IF: CC < CP < PP
9. SX: CC < CP < PP
10. AX: CC < CP < PP
11. WF: CC < CP < PP
12. O: CC < CP < PP
13. P - C: US, NI, I, S on all variables.

III. SAMPLES, SUBJECTS AND ADMINISTRATIVE PROCEDURES.

A. A total of over 500 subjects were administered the test battery. These subjects were members of 24 separate classes in 18 different schools located in The United States (Milwaukee, Wisconsin), Northern Ireland (Belfast), Eire (Dublin), and Scotland (Edinburgh). In each country two types of pupils, Catholic and Protestant, were tested. In every country the Catholics attended Catholic schools; the Protestants Non-Catholic schools. In Northern Ireland, Eire, and Scotland the "Non-Catholic" schools were Protestant affiliated while in the United States they were public schools with no religious affiliation and minimal religious influence. A third sample was tested in the United States and was composed of Catholic pupils attending public schools.

Two separate analyses of the data were carried out. The "Cross-National Study" employed a two way analysis of variance design: Catholic vs. Protestant pupils (columns) and the four countries represented in the rows. The "American Study" used a one way analysis of variance design and the groups involved were Catholics in Catholic schools, Catholics in public schools, and Protestants in public schools.

The reason for two separate analyses was difficulty encountered in securing IQ information for the Catholics in public schools in the United States. Each sample in both studies was composed of 25 subjects ($N = 200$ for the Cross-National Study and $N = 75$ for the American study.) Each sample was matched to every other.

1. The American Samples. Due to the difficulties experienced by other researchers (e.g. Quin, 1965), the greatest problems with respect to securing permission to conduct such a study, were anticipated to occur in the United States. In fact, apart from formal applications, interviews etc., for each of the three educational systems involved, no difficulties were encountered.

a. Protestants in public schools. After an interview and formal application including a paper reporting the objectives of the research etc. permission was secured from the Director of Educational Research for the Milwaukee Public School System to test samples from Sholes Junior High School. The school was selected on the basis of general age, IQ and socio-economic requirements.

b. Catholics in Catholic schools. Permission in this instance was acquired by direct application to the Superintendent of Schools for the Milwaukee Archdiocesan. The school was selected on the basis of general IQ and socio-economic requirements after an interview but no formal application.

c. Catholics in public schools. In this case, permission was granted immediately by the director of a large, Catholic sponsored, religious education program specifically designed for Catholic pupils attending public schools where there is no religious education. This sample was composed of pupils attending some ten public schools in the area. (Thus preventing the gathering of IQ data from school records.)

2. The Northern Irish Samples. The arrangements were made in this case through the Department of Psychology, Queen's University, Belfast.

a. Catholics in Catholic Schools. The battery was administered in four Catholic schools chosen on the basis of IQ and male or female pupils. The schools were Christian Brothers Grammar School, St. Augustine's Secondary

Intermediate School, Dominican College, and St. Monica's Secondary Intermediate School.

b. Protestants in Protestant Schools. Again four schools were involved: Annadale Grammar School, Orangefield Boy's Secondary Intermediate School, Carolan Grammar School and Orangefield Girl's Secondary Intermediate School.

3. The Irish Sample. Arrangements were made through The Education Research Unit of St. Patrick's Teachers Training College, Dublin.

a. Catholics in Catholic schools. Two Catholic schools were involved: Holy Faith Convent and St. Paul's School. Two separate classes were tested in each.

b. Protestants in Protestant Schools. Four classes in two schools, Bertrand and Rutland (Girls) and Sandford Park (Boys), were tested.

4. The Scottish Sample. Arrangements were made personally in this case through The Godfrey Thompson

Educational Research Unit of the University of Edinburgh.

a1 Catholics in Catholic schools. Initial contact was made with two schools, St. Thomas Aquinas School for Girls and St. Anthony's School for Boys. An interview was arranged through the Vicar General, Cathedral House with the Director of Research. After general permission was granted a formal interview was arranged with each headmaster who subsequently granted permission to test.

b. Protestants in Protestant schools. One school, Bellview Secondary School was involved and two large classes tested. No formal interview or application was required. The two classes (one of each sex) were combined in order to limit schedule disruptions.

5. A pilot study was conducted shortly before testing the American sample. The sample was from Norton Park Secondary School and permission was secured to test through The Godfrey Thompson Educational Research Unit.

Intelligence Percentile IQ:		Mean Percentile	Standard Deviation
US: -	Catholics	63	14.12
	Protestants	60	19.7
NI:	Catholics	66.4	15
	Protestants	60.1	19.6
I:	Catholics	63	15
	Protestants	60	20
S:	Catholics	63.3	12
	Protestants	61.2	8.9

B. Subjects. The subjects involved were between the ages of 13 years 6 months and 14 years 6 months in every sample of both studies. All were in their ninth school year. The principal variable on which samples were equated was $IQ^{\hat{x}}$ ^{Percentile, $IQ^{\hat{x}}$} These were either tested by the experimenters or copied from school records, converted into percentiles, and ^{then} the means and standard deviations between samples matched. (cf. opposite.)

Samples were further matched on the basis of socioeconomic status (fathers' occupations) and sex in that order of preference. In fact every Catholic sample was matched to the American Catholics; every Protestant sample to the American sample. This resulted in each sample being principally composed of lower middle class and working class children. The Catholic samples are all equally divided between males and females while the Protestant samples have a slightly greater number of females.

C. Administrative Procedure. The same two experimenters each administered the same tests in every case, The details of the administration of the battery were as follows. The tests were never referred to as such. Subjects were informed at the outset that no-one at the school would see the results.

The conformity tests were passed out and a careful recital of the instructions following each problem was given with an example. Subjects were informed that they would have about 20 minutes to complete the test but it probably wouldn't take that long; so, when finished, they could turn the page over and write their religion, father's occupation, exact date of birth and "a very brief autobiography". The only information extracted was father's occupation, birthdate and religion. After all subjects were finished, they were divided into three groups and given The Utility, Word Association and Conformity test (group) in different orders. These tests are presented on the following pages. The instructions were paraphrased from the test papers, questions called for and answered and the test begun. Each test lasted 20 minutes and "Time Left" periodically written on the board.

NAME:

PROBLEMS

SCHOOL:

1. Joan promised her little sister that she would take her to the circus which is coming to town for one day only. After she had made the promise, Joan learned that her school is playing an important football match on the same day. She is very keen to see it.

WHAT SHOULD SHE DO?

- ☐ A. Go to the match because she would rather do that than go to the circus.
- ☐ B. Take her sister to the circus because she promised she would.
- ☐ C. Talk her sister into going to the football match instead of the circus.
- ☐ D. Get somebody else to take her sister to the circus.

Put a 1. next to the answer you like best.

Put a 4. next to the answer you like least.

Put a 2. next to the answer you like second best and a 3. next to the answer you like third best.

DO THE SAME FOR THE NEXT TWO PROBLEMS.

2. Robert has two important tests to take next week. One is in arithmetic and the other is in science. He likes science better and he is anxious to get a good mark in it. He would like to do well in both. So far this year he has done very well in science and not so well in arithmetic. He doesn't have time to study really well for both arithmetic and science. WHAT SHOULD HE DO?

- ☐ A. Study science because he likes it better.
- ☐ B. Study mostly arithmetic because he knows he's not as good in arithmetic as he is in science.
- ☐ C. Study them equally because they are both important.
- ☐ D. Ask the teacher to give one of the tests a week later.

NUMBER THE ABOVE IN ORDER OF PREFERENCE.

3. Mary is wondering what she should do on Saturday night. She has agreed to go out with John but she is not really looking forward to it. On Thursday Bill calls her and asks her to go out with him on Saturday night. Mary enjoys going out with Bill but she doesn't often get the chance because he lives a long ways away. She agreed to go out with Bill too and now she has two dates for Saturday night. WHAT SHOULD SHE DO?

- ☐ A. Go out with Bill because she likes him better.
- ☐ B. Go out with John because he asked her first and she accepted his offer first.
- ☐ C. Make some excuse and not go out at all.
- ☐ D. Persuade a girl friend to come along and see how things work out.

NUMBER THESE ANSWERS AGAIN. PUT A 1 NEXT TO THE ANSWER YOU LIKE BEST, A 2 NEXT TO THE ANSWER YOU THINK IS SECOND BEST AND SO ON.

NAME:

SCHOOL:

USES FOR THINGS

Listed below are five objects. For each object write down as many different uses as you can think of. We have started you off with a couple of uses for each object. You just add as many others as you can think of no matter how strange they may seem.

EXAMPLE:

TIN CAN: ash tray, to catch fish

Write in your uses in the space above.

ARE THERE ANY QUESTIONS?

1. BRICKS: build houses, doorstep, NOW FILL IN YOUR USES
2. PENCILS: to write, bookmark,
3. PAPER CLIPS: clip paper together, make a necklace,
4. TOOTHPICKS: clean teeth, test cake,
5. SHEET OF PAPER: write on, make an airplane,

HAVE YOU WRITTEN DOWN AS MANY DIFFERENT USES FOR EACH OBJECT AS YOU CAN THINK OF? CHECK.

IF YOU NEED MORE SPACE USE THE BOTTOM OF THIS PAGE.

NAME:

SCHOOL:

WORD ASSOCIATION

Here are twenty-five words. AFTER each word write down as many different meanings as you can think of.

EXAMPLES BARK: tree, dog, boat, seal.

ARE THERE ANY QUESTIONS?

1. ARM:

2. BIT:

3. BOLT:

4. CAP:

5. COIL:

6. DUSK:

7. FAIR:

8. FAST:

9. FILE:

10. GRAVE:

11. HOST:

12. LEAF:

13. MORTAR:

NAME:
SCHOOL:

- 14. PINK:
- 15. PITCH:
- 16. PLANE:
- 17. POKE:
- 18. POLICY:
- 19. PORT:
- 20. PUNCH:
- 21. RAKE:
- 22. SACK:
- 23. STRAND:
- 24. TACK:
- 25. TENDER:

After having completed the Conformity Test twice (individually and in groups), the Utility Test, and the Word Association Test, subjects were given the Word Fluency Test which was precisely timed. While taking this test it was "discovered" that the first time the "Problems" (viz. conformity) test was given a number of people ranked two different solutions with the same number. An^{erroneous} example was given:

1 A

2 B

~~3~~ C

4 D

Subjects were all asked if they understood how it was supposed to have been done. Questions were called for and then the experimenter said, "All right we will throw away the first test and do it again. Now, no more questions; I will repeat the instructions." This was done and ended with, "Now fill in the sheets with what you think are the best, second best, third best and worst possible solutions." The sheets were passed out by the second experimenter during the instructions and all questions were refused.

In the event that IQ's were not available, IQ test booklets (Raven Matrices) were passed out and subjects were instructed and tested. Following this all subjects were completely debriefed. Subjects in every case quite enjoyed themselves and evidenced much interest during the debriefing and discussion of the purpose.

CHAPTER SEVEN

RESULTS

- I. THE CROSS-NATIONAL STUDY
- II. THE AMERICAN STUDY

I. THE CROSS-NATIONAL STUDY

With respect to the cross-national study, separate two-way analyses of variance were conducted between country (rows) and religious affiliation (columns) for each factor or variable.¹ The results of these analyses are presented in the table bearing the number of the relevant hypothesis and the letter A. A Fixed Effects Model was employed in each case² and the data analyzed by the methods described in Hays (1966). Post Hoc Comparisons are presented in the tables bearing the number of the relevant hypothesis and the letter B (where appropriate). The method used was that of Tukey (1949) described in Guilford (1965). In cases where the results of the analysis of variance were not significant, the table bearing the relevant hypothesis number and the letter B presents the means of the various groups. Asterisks indicate significant results contrary to hypothesis.

1. This procedure was not applied to the originality scores since those scores represent deviations from a norm which was unique for each country. Instead, separate t tests were carried out between Catholics and Protestants in each country.

2. with the above exception.

HYPOTHESIS 1: Catholic pupils (C) will evidence less originality than Protestant (P) pupils in:

- a. The United States (US),
- b. Northern Ireland (NI),
- c. Eire (I), and
- d. Scotland (S).

TEST 1: Utility Test (infrequency of response)

TABLE: 1A. Originality
t tests
Catholic vs. Protestant

Country	Means		t	p
	Catholic	Protestant		
U.S.	8.32	20.80	4.76	<.001
N.I.	9.60	14.56	2.29	<.05>.025
I.	10.44	14.84	1.53	<.10>.05
S.	12.56	12.44	<1.00	NS

Originality

Table 1A (opposite) presents the results of the four t tests conducted between Catholic and Protestant pupils in the United States, Northern Ireland, Eire and Scotland. The null hypothesis in each case was that the Catholic mean would be equal to or greater than the Protestant mean.

In the United States and Northern Ireland the difference between the means is significantly greater than zero and in the hypothesized direction. In these countries Catholics scored significantly lower than Protestants on this test of Originality. In Eire the difference between the means was again in the hypothesized direction but its magnitude only approached a significant departure from chance. The difference in Scotland was virtually zero.

T-tests conducted between the means of the various countries indicated no difference sufficiently large to represent a significant departure from zero.

HYPOTHESIS 2: Catholic pupils (C) will evidence less ideational fluency than Protestant pupils (P) in:

- The United States (US),
- Northern Ireland (NI),
- Eire (I); and
- Scotland (S).

TEST 2: Utility Test (total number of responses)

TABLES: 2A. Ideational Fluency
Two Way Analysis of Variance
(rows = country. columns = religion.)

Source	SS	df	MS	F	p<
Rows	336	3	112	3.03	.05
Columns	700	1	700	18.92	.01
Error	7062	192	37		
Interaction	296	3	99	2.68	.05
Total	8394	199			

2B. Post Hoc Analysis of Differences
Protestant Mean minus Catholic Mean

	Means		Differences	p<
	C	P		
US	13.60	20.44	6.84	.0005
NI	13.88	18.20	4.32	.01
I	18.90	19.60	0.70	NS
S	14.88	17.50	2.62	NS

Ideational Fluency.

With respect to Table 24 we can see that the F ratio for row effects is significant. There are systematic effects on Ideational Fluency scores due solely to country. Inspection indicates that the difference is due to the exceptionally high mean for the Irish sample. In fact the Irish mean differs from that of each of the other rows at or beyond the 2% level. No other pair wise comparison of row (country) means yields a significant difference.

The F ratio for columns is highly significant and we may conclude that there are systematic differences due solely to religious affiliation on the number of ideas called up per unit time. Inspection of the column means indicates that again Catholics have achieved lower scores than Protestants on this test of ideational fluency.

The F ratio for interaction is also significant and we may conclude that there are differing column effects within rows and/or differing row effects within columns. That is religious affiliation has different effects in different countries on ideational fluency. With respect to column effects within rows post hoc analysis indicates that Catholic pupils differ significantly from Protestants in both the U.S. and Northern Ireland while the differences between the two groups in Eire and Scotland are not significant at an acceptable level. The latter differences are in the hypothesized direction. In terms of row effects within columns inspection indicates that there is a large difference between the Irish Catholic sample and the other samples.

HYPOTHESIS 3: Catholic pupils (C) will evidence less spontaneous flexibility than Protestant pupils (P) in:

- The United States (US),
- Northern Ireland (NI),
- Eire (I), and
- Scotland (S).

TEST 3: Utility Test (classes of response)

TABLES: 3A. Spontaneous Flexibility
Two Way Analysis of Variance
(rows = country. columns = religion.)

Source	SS	df	MS	F	p<
Rows	99	3	33	1.50	NS
Columns	318	1	318	14.26	.01
Error	4289	192	22.3		
Interaction	184	3	61.3	2.75	.05
Total	4890	199			

3B. Post Hoc Analysis of Differences
(Protestant Mean minus Catholic Mean)

	Means		Differences	p<
	C	P		
US	10.30	15.72	5.42	.0005
NI	10.16	13.88	3.72	.005
I	13.20	14.10	0.90	NS
S	11.88	12.36	0.48	NS

Spontaneous Flexibility

The results of the two way analysis of variance for Spontaneous Flexibility indicate that there are no significant effects attributable to country (row) alone. This result is somewhat surprising since one might have expected significant differences between the various countries on the basis of the differences between the various educational systems.

There is a systematic and highly significant difference between columns as indicated by the F ratio for religious affiliation. We may conclude with considerable confidence that religious affiliation has a significant effect on Spontaneous Flexibility as measured here. Inspection of the column means indicates that this effect is in the hypothesized direction. Catholic pupils evidence less Spontaneous Flexibility than Protestant pupils.

The significant F ratio for interaction indicates that column effects are different within rows. Post Hoc Analysis indicates that Catholics score significantly lower than Protestants on this measure in the U.S. and Northern Ireland. The differences in Eire and Scotland are not significantly different from zero but they are in the hypothesized direction. Inspection of the row effects within columns indicates that Irish Catholics have scored the highest of all Catholics on this measure, as was the case with Ideational Fluency.

HYPOTHESIS 4: Catholic pupils (C) will evidence less 'adaptive flexibility' than Protestant pupils (P) in.

- The United States (US),
- Northern Ireland (NI),
- Ire (I), and
- Scotland (S).

TEST 4: Word Association

TABLES: 4A. Word Association
Two Way Analysis of Variance
(rows = country. columns = religion.)

Source	SS	df	MS	F	p
Rows	339	3	113	1.38	NS
Columns	3	1	3	<1	NS
Error	15789	192	82.23		
Interaction	204	3	68	<1	NS
Total	16335	199			

4B. Means and Differences
Protestant Mean minus Catholic Mean

	Means		Differences	p
	C	P		
US	34.50	33.50	-1.00	NS
NI	29.20	32.88	3.68	NS
I	32.60	31.00	-1.60	NS
S	30.10	30.68	0.58	NS

Word Association

The two way analysis of variance for Word Association indicates no significant row, column, or interaction effects. We must conclude that there are no non-random differences attributable to nationality alone, religious affiliation alone, or the interaction of these two factors. Inspection of the means indicates that this factor has failed to differentiate Catholic from Protestant students in the hypothesized direction with regard to Eire and the U.S. The largest difference was between Catholics and Protestants in Northern Ireland and was in the hypothesized direction. It is possible that the relatively high correlation found by Getzells and Jackson (1962) between this test and IQ provides an explanation. There are no IQ differences between the various samples.

HYPOTHESIS 5: Catholic pupils (C) will evidence less Word Fluency than Protestant pupils (P) in:

- The United States (US),
- Northern Ireland (NI),
- Eire (I), and
- Scotland (S).

TEST 5: Word Fluency

TABLES: 5A. Word Fluency
Two Way Analysis of Variance
(rows = country. columns = religion.)

Source	SS	df	MS	F	p<
Rows	87	3	29	<1	NS
Columns	107	1	107	1.88	NS
Error	10949	192	57		
Interaction	777	3	259	4.54	.01
Total	11920	199			

5B. Means and Differences
Protestant Mean minus Catholic Mean

	Means		Differences	p<
	C	P		
US	31.50	24.13	-7.37*	.01
NI	25.12	29.48	4.36	.01
I	27.50	25.50	-2.00	NS
S	28.40	27.32	-1.08	NS

Word Fluency

The two way analysis of variance for Word Fluency indicates no significant effects attributable to religious affiliation or country alone. The F ratio for interaction is, however, significant and one may conclude that there are significant effects due to unique combinations of religious affiliation and country. That is, there are significant differences between columns within rows or between rows within columns.

The only difference which is both significant and in the hypothesized direction is that between the Catholic and Protestant pupils in Northern Ireland. The difference between these two groups in the U.S. is quite large ($p .01$ with a two tailed test) but not in the hypothesized direction. Formally speaking we can reject the one-tailed null hypothesis in Northern Ireland only. Inspection of the differences between the means of these two groups within the various countries indicates that in the U.S., Eire, and Scotland the direction of these

differences is contrary to hypothesis while in the U.S. the magnitude is considerable.

Although the differences between Catholic and Protestant students in Eire and Scotland may be attributable to chance this cannot be said with respect to those obtained in the U.S. The exact explanation for that result is not clear. (The most simple explanation is that there was an error in timing the test for the American Catholic sample.) Theoretically speaking there is no apparent explanation within the framework of this research. The most plausible explanation for the difference between the American samples is some curricular emphasis on words or vocabulary per se rather than as symbols or meanings. If this were so it might provide the basis for an explanation of the differences between the same groups in the U.S. on the test for adaptive flexibility - another vocabulary oriented test.

HYPOTHESIS 6: Catholic pupils (C) will evidence less conformity than Protestant pupils (P) in:

- The United States (US),
- Northern Ireland (NI),
- Eire (I), and
- Scotland (S).

TEST 6: Conformity (changes to group minus from group)

TABLES:	6A. Conformity Two Way Analysis of Variance (rows = country. column = religion.)				
Source	SS	df	MS	F	p
Rows	42	3	14	1.4	NS
Columns	3	1	3	<1	NS
Error	1903	192	9.91		
Interaction	31	3	10.33	1.04	NS
Total	1979	199			
6B. Mean Conformity Scores.					
Changes TO group minus changes FROM group.					
	Catholic		Protestant		
US	1.64		0.40		
NI	1.24		1.96		
I	0.92		0.48		
S	1.90		1.76		
Mean sum of changes TO decision of group.					
US	2.68		2.20		
NI	3.16		3.04		
I	2.44		2.68		
S	3.32		3.48		
Mean sum of changes FROM decision of group.					
US	1.04		1.80		
NI	1.92		1.08		
I	1.52		2.20		
S	1.44		1.72		

Conformity

Table 6A indicates that there are no significant row, column, or interaction effects on the algebraic sum of changes to and from the decision of a group. From Table 6B it can be seen that with one exception the differences between Catholic and Protestant pupils is in the hypothesized direction. In each of these cases Catholic pupils evidence more conformity. The exception is Northern Ireland where Protestant pupils evidence more conformity.

The second portion of Table 6B presents mean changes to the decision of a group for the various samples. These scores are the positive aspects of the algebraic sums presented in the first portion of the table. Within Northern Ireland one can see that there is virtually no difference between mean number of changes to the decision of a group when Catholic and Protestant pupils are compared. Focusing on the third portion of the table, mean changes from the decision of a group, we can see that there is a considerable

difference between the two groups with Catholic students changing away from the group decision more than Protestant students in Northern Ireland (and more than any of the other Catholic groups). There is only one way in which a subject can achieve a change away from the decision of the group, by choosing the same ranking as the group consensus, meeting with the group and being made aware of this, and then changing to a different opinion. (There are, for e.g. two ways in which a subject might not change at all - by agreeing or not agreeing in every instance.) Catholic students show considerably more changes away from the group decision in Northern Ireland and this is the reason for their lower persuasibility score. One might have expected this given the basis of the situation in Northern Ireland. On quite a number of issues Catholics could approximate the position of their sub-group by assuming the converse of the majority opinion.

II. THE AMERICAN STUDY

With respect to the American Study separate one-way analyses of variance were carried out for each factor or variable. The groups involved were Catholics in Catholic schools, Catholics in public schools, and Protestants in public schools. The results of these analyses are presented in the tables bearing the relevant hypothesis number and the letter A. As in the preceding section, each hypothesis is followed by a second table bearing the relevant hypothesis number and the letter B and these contain either the results of a Post Hoc Analysis or the means of the various groups in the event of a non-significant F ratio.

A fixed effects model was employed in each case and the methods described by Hays (1966) were utilized in analyzing the data. Post Hoc Comparisons were carried out by the Tukey (1949)¹ method as described in Guilford (1965). Asterisks indicate significant results contrary to hypothesis.

HYPOTHESIS 7: Catholics in Catholic schools (CC) will evidence less originality than Catholics in public schools (CP) who will in turn evidence less originality than Protestants in public schools (PP).

TEST 7: Utility Test (infrequency of response)

TABLES: 7A. Analysis of Variance: Originality.

Source	SS	df	MS	F	p<
Between	2224	2	1112	16.27	.01
Within	4920	72	68.33		
Total	7144	74			

7B. Post Hoc Analysis of Differences

	Means	Differences	p<
CC	8.32	CC - CP	NS
CP	10.48	CC - PP	.0005
PP	20.80	CP - PP	.0005

Originality

Table 7A summarizes the results of a one-way analysis of variance between: Catholics attending Catholic schools (CC), Catholics attending public schools (CP), and Protestants attending public schools (PP). The significant F ratio indicates that we can reject the null hypothesis of no difference between the three groups with considerable confidence. Differences do exist at or beyond the .01 level of significance.

Post Hoc Analysis indicates that it is the Protestants in public schools (PP) who differ significantly from each of the other two groups. There is no significant difference between the two Catholic groups though Catholics in Catholic schools evidenced less originality than those in public schools, as was hypothesized.

HYPOTHESIS 8: Catholics in Catholic schools (CC) will evidence less ideational fluency than Catholics in public schools (CP) who will in turn evidence less ideational fluency than Protestants in public schools (PP).

TEST 8: Utility Test (number of responses)

TABLES: 8A. Analysis of Variance: Ideational Fluency.

Source	SS	df	MS	F	p<
Between	950	2	475	17.43	.01
Within	1961	72	27.24		
Total	2911	74			

8B. Post Hoc Analysis of Differences.

	Means	Differences	p<
CC	13.60	CC - CP	NS
CP	13.48	CC - PP	.0005
PP	20.44	CP - PP	.0005

Ideational Fluency

The one way analysis of variance between these same groups for ideational fluency yields an F ratio which is again highly significant. We may reject the null hypothesis that there are no differences between these groups in the number of ideas they are able to call up per unit time. (cf. Table 8A)

Post Hoc Analysis indicates that it is the Protestants in public schools who differ from the Catholics in Catholic schools and the Catholics in public schools. Again there are no significant differences between Catholic pupils in Catholic schools and Catholic pupils in public schools. The differences which are significant favor the Protestant pupils who score higher than either of the other groups on this test of ideational fluency. (cf. Table 8B)

HYPOTHESIS 9: Catholics in Catholic schools (CC) will evidence less spontaneous flexibility than Catholics in public schools (CP) who will in turn evidence less than Protestants in public schools (PP).

TEST 9: Utility Test (classes of response)

TABLES: 9A. Analysis of Variance
Spontaneous Flexibility

Source	SS	df	MS	F	p<
Between	420	2	210	12.23	.01
Within	1236	72	17.17		
Total	1656	74			

9B. Post Hoc Analysis of Differences

	Means	Differences	p<
CC	10.30	CC - CP	NS
CP	10.72	CC - PP	.0005
PP	15.72	CP - PP	.0005

Spontaneous Flexibility

Table 9A the summary table for a one way analysis of variance between the same groups on Spontaneous Flexibility indicates that differences do exist at or beyond the .01 level of significance ($F = 12.23$). Inspection of these differences (cf. Table 9B) indicates that all are in the hypothesized direction.

Post Hoc Analysis indicates that it is the Protestant pupils in public schools who differ significantly from both Catholics in Catholic schools and Catholics in public schools. There are no significant differences between the two Catholic groups.

HYPOTHESIS 10: Catholics in Catholic schools (CC) will evidence less adaptive flexibility than Catholics in public schools (CP) who will in turn evidence less adaptive flexibility than Protestants in public schools (PP).

TEST 10: Word Association.

TABLES: 10A. Analysis of Variance: Adaptive Flexibility.

Source	SS	df	MS	F	p
Between	120	2	60	1.29	NS
Within	3356	72	46.6		
Total	3476	74			

10B. Post Hoc Analysis: Adaptive Flexibility.

	Means	Differences	Direction
CC	34.50	CC - CP	CC > CP
CP	31.96	CC - PP	CC > PP
PP	33.50	CP - PP	CP < PP

Word Association

Table 10A indicates that there are no significant differences between these three groups in Word Association. Inspection of the means presented in Table 10B indicates that Catholics in Catholic schools scored higher than either of the other two groups (contrary to hypothesis). The Catholic pupils in public schools did score lower than Protestant pupils in public schools as hypothesized.

This test which Getzels and Jackson (1962) found to be relatively highly correlated with intelligence does not distinguish between these three groups. It did not distinguish between Catholic and Protestant pupils in the cross-national study either.

HYPOTHESIS 11: Catholics in Catholic schools (CC) will evidence less word fluency than Catholics in public schools (CP) who will in turn evidence less word fluency than Protestants in public schools (PP).

TEST 11: Word Fluency.

TABLES: 11A. Analysis of Variance: Word Fluency.

Source	SS	df	MS	F	p<
Between	835	2	417	7.23	.01
Within	4150	72	57.64		
Total	4985	74			

11B. Post Hoc Analysis: Word Fluency.

	Means	Differences	p<
CC	31.50	CC - CP	.005*
CP	24.12	CC - PP	.005*
PP	24.13	CP - PP	NS

Word Fluency

Table 11A indicates that there are differences in Word Fluency between these same groups at or beyond the .01 level of significance.

Post Hoc Analysis presented in Table 11B indicates that it is the Catholics in Catholic schools who differ significantly from both Catholics in public schools and Protestants in public schools. However, these differences are not in the hypothesized direction. There is virtually no difference between the two groups in public schools while those in Catholic schools score significantly higher. Again these results parallel those found in the cross-national study. In that case, the results for both Eire and Scotland were contrary to hypothesis though not significant. In this case we can attribute the difference to Catholic education rather than Catholic religious affiliation - Catholics in public schools did not differ from Protestants in public schools. There does seem to be an indication of relatively high emphasis on words as symbols in Catholic schools and some slight indication (cf. Table 10B) on words as vocabulary in these schools.

HYPOTHESIS 12: Catholics in Catholic schools (CC) will evidence less conformity than Catholics in public schools (CP) who will in turn evidence less conformity than Protestants in public schools (PP).

TEST 12: Modified Persuasibility Test.

TABLES: 12A. Analysis of Variance: Conformity

Source	SS	df	MS	F	p
Between	20	2	10	1.23	NS
Within	583	72	8.1		
Total	603	74			

12B. Post Hoc Analysis: Conformity				
	Means	Differences	Directions	
CC	1.80	CC - CP	CC > CP	
CP	1.28	CC - PP	CC > PP	
PP	0.40	CC - PP	CP > PP	

Conformity

Table 12A indicates that there are no significant differences between these three groups in conformity. However, from Table 12B it can be seen that the differences between the three groups are all in the hypothesized direction. Catholics in Catholic schools are more conformable than Catholics in public schools who are in turn more conformable than Protestant pupils in public schools.

HYPOTHESIS 13: The difference between Catholic and Protestant pupils will be greater in the U.S. than in Northern Ireland, Eire, or Scotland.

TEST 13: All.

TABLE 13:**		Comparison of Differences (Protestant - Catholic)				
Test:	O	IF	SX	WA	WF	C
<u>Country</u>						
U.S.	12.48	6.84	5.42	1.00	7.37*	1.24
N.I.	4.96	4.32	3.72	3.68	4.36	0.72
I.	4.46	0.70	0.90	1.60	2.00	0.44
S.	0.12	2.62	0.48	0.58	1.08	0.14

** Abbreviations of test names are the same throughout. (cf. p. 189.)

Differences

From table 13 it can be seen that the difference between Catholic and Protestant pupils is greatest on every test in the United States with one exception, the Word Association test which failed to distinguish at all between the two groups at a significant level. The rank order of differences is quite consistent over all tests with the largest in the United States followed by Northern Ireland, Eire, and the smallest Scotland.

TABLE 14.

Summary of Cross-National Results.

(direction of significant differences)

Test:**	O	IF	SX	WA	WF	C
U.S.	C < P	C < P	C < P	NS	C > P*	NS
N.I.	C < P	C < P	C < P	NS	C < P	NS
I.	C < P	NS	NS	NS	NS	NS
S.	NS	NS	NS	NS	NS	NS

TABLE 15.

Summary of American Results.

(direction of significant differences)

Test:**	O	IF	SX	WA	WF	C
CC vs CP	NS	NS	NS	NS	CC > CP	NS
CC vs CP	CC < PP	CC < PP	CC < PP	NS	CC > PP	NS
CP vs PP	CP < PP	CP < PP	CP < PP	NS	NS	NS

** Abbreviations of test names (cf. p.139.)

CHAPTER EIGHT : DISCUSSION AND CONCLUSIONS

- I. FACTORS AND VARIABLES
- II. DISCUSSION

I. FACTORS AND VARIABLES.

A. Originality. This factor is probably the single most important index of creativity and scoring for originality on the basis of statistical infrequency the most straightforward means of assessing originality. The results of the various hypotheses concerning originality are therefore the most important herein.

1. Cross-National. On the basis of the results presented in Tables 1A and 1B, the following have been demonstrated.

a. When the norms by which statistical infrequency is assessed, are determined independently for each country, there are no significant differences between the mean originality scores of pupils in the United States, Northern Ireland, Eire, and Scotland. This would probably not have been the case if one norm had been established for all countries and statistical infrequency for each country determined on the basis of that norm. However, it should be noted that exactly how they might have differed is not

obvious. One would not, for example, be anxious to suggest that educationally advanced systems would produce more original pupils.

b. Catholic pupils scored significantly lower than Protestant pupils on this test of originality in the U.S.,^{AND} Northern Ireland, and Eire. There was virtually no difference between the two groups in Scotland. We may conclude, as hypothesized, that differences in originality favoring Protestant pupils are not peculiar to the situation in the United States but, these differences are not universal. These results represent a direct demonstration of a low degree in Roman Catholics as a group, of a mental ability factor crucial to creative production.

2. American. The following has been demonstrated with respect to originality and Catholic education within the United States. (cf. Tables 7A and 7B.)

a. There are significant differences between the mean originality scores of Catholics attending Catholic schools vs. Protestants attending public schools and between Catholics attending public schools vs. Protestants attending public schools. However, the difference between Catholics

in Catholic schools and Catholics in public schools, while in the hypothesized direction, is not statistically significant. The effect of Catholic schools as opposed to that of public schools in producing lower originality is minimal. There is little if any indictment here of Catholic education as an inhibitor of originality.

b. The significant differences which do exist between these three American samples are two: Catholics in Catholic schools are significantly less original than Protestants in public schools and Catholics in public schools are significantly less original than Protestants in public schools. On the basis of these results we may conclude that Catholic pupils irrespective of educational background (i.e. Catholic or public) are significantly less original than Protestant pupils.

3. General Conclusion. These studies taken together demonstrate that Catholic pupils generally score lower than Protestant pupils on this measure of originality. However, there are two important qualifications to these findings.

a. This does not appear to be universal. There are, for example, no significant differences between Catholic and Protestant pupils in Scotland. This particular qualification is further discussed under the title 'Differences' (cf. p.259).

b. The lower score of the Catholic pupils in the United States and quite probably in the other countries is not attributeable to Catholic education in particular (cf. p.22c).

B. Ideational Fluency. This factor is of considerable importance in the generation of creative products. The number of ideas called up per unit time is a measure of a free flow of ideas which is in turn indicative of productivity. Voluminous productivity is the rule among creators.

1. The Cross-National Study. The following has been demonstrated with respect to Ideational Fluency. (cf. Tables 2A and 2B.)

a. Ideational fluency is significantly greater in Eire than in The United States, Northern Ireland and Scotland. Though not hypothesized some difference was to be expected between the mean scores of the various countries or, more accurately phrased, there was no reason for assuming a null hypothesis of no difference between the various means. (cf. 228) As in the case of originality, the direction of the differences between countries are not explained on the basis of educational sophistication or "enlightenment". In fact, there is some previous indication of relatively sophisticated educational systems (and even higher IQ in that case) being contra-indicative of ideational fluency. Iscoe and Pierce-Jones (1964) compared white and Negro American school children (aged 5 - 9) from segregated schools on virtually the same test. Although the white children had significantly higher IQ and almost certainly came from more sophisticated schools, the Negro children scored significantly higher on ideational fluency. The test these authors used was different only in that different stimulus objects were used and it was administered individually along the lines described by Wallach and Kogan (1965).

b. As hypothesized, Catholic pupils evidence significantly less ideational fluency than Protestant pupils in both the United States and Northern Ireland. In Eire and Scotland the differences were in the same direction. We conclude that difference in ideational fluency favoring Protestant over Catholic pupils exist and are not peculiar to the United States. But, these differences are probably not universal. Given the disproportionately low productivity of Roman Catholics as a group in both the United States and the United Kingdom, these findings represent a direct demonstration of the low degree of another mental ability factor crucial for creative productivity.

2. The American Study. The results of comparisons between Catholics attending Catholic schools, Catholics attending public schools and Protestants attending public schools can be found in Tables 8A and 8B. These results closely parallel those found with respect to originality.

a. Protestants in public schools evidence significantly more Ideational Fluency than both Catholics in Catholic schools and Catholics in public schools. On the basis of this finding we conclude that Protestant pupils score higher in this measure than Catholic, irrespective of the educational background of the Catholic pupils.

b. There is virtually no difference between Catholics attending Catholic schools and Catholics attending public schools in Ideational Fluency. We conclude that there is no inhibiting effect of Catholic education alone on the ideational fluency of Catholic pupils.

3. General Conclusion. Catholic pupils generally score lower than Protestant on this measure of Ideational Fluency.

a. The difference is not significant in every country but generally in the hypothesized direction.

b. The differences in the U.S. are not attributable to Catholic education.

c. There are significant differences between countries but these are not explained by educational sophistication.

C. Spontaneous Flexibility. The ability to shift classes of response is crucial to the production of original and thus creative responses. Just as the production of a small number of responses minimizes the probability of original responses, the disposition to think in rigid categories minimizes the same probability. The ability to easily abandon useless or unproductive approaches is crucial to locating original and relevant solutions.

1. The Cross-National Study. The following conclusions have been drawn on the basis of the results presented in Tables 3A and 3B.

a. There were no significant differences between the means of the national samples in Spontaneous Flexibility. As in the case of Ideational Fluency there was no reason for assuming a null hypothesis of no differences and no hypothesis was made with respect to national differences. ~~However, this finding is somewhat surprising.~~ (Although there were no differences between national samples in Originality, that result could be explained by assuming the success of scoring procedures minimizing cross-cultural effects. There were differences as expected but not hypothesized between countries on Ideational Fluency.)

Iscoe and Pierce-Jones (1964) found no differences in Spontaneous Flexibility between white and Negro children. The findings of the present study would seem to indicate, in light of the Iscoe - Pierce-Jones results, that Spontaneous Flexibility is independent of educational sophistication (assuming the segregated schools were not equal). This is to be contrasted with Ideational Fluency which appears to show negative concomitance with IQ and/or educational sophistication.

b. As in the previous cases, there are systematic differences between Catholic and Protestant pupils on this factor of divergent thinking. Catholic pupils evidence significantly less spontaneous flexibility in the U.S. and Northern Ireland as hypothesized. The differences in Eire and Scotland are non-significant and though quite small not in the hypothesized direction. We conclude that significant differences favoring Protestant pupils over Catholic pupils occur elsewhere than the U.S. but are not universal.

2. The American Study. The results of this measure of Spontaneous Flexibility are similar in this case to those of both Originality and Ideational Fluency. (cf. Tables 9A and 9B.)

a. Catholic pupils irrespective of type of education (viz. Catholic vs. public) score significantly lower than Protestants educated in public schools.

b. There are no significant differences in Spontaneous Flexibility between Catholics in Catholic schools and Catholics in public schools.

3. General Conclusions. It may be concluded that Catholic pupils, when they do evidence significant differences from Protestant pupils, do so in a direction indicating less Spontaneous Flexibility.

a. The difference is significant in the U.S. and Northern Ireland; non-significant in Eire and Scotland.

b. Within the U.S. the differences are not attributable to Catholic education in particular.

c. There are no significant differences between the means of different countries. Spontaneous Flexibility may be independent of educational sophistication.

D. Word Association. This test is not specifically indicative of any one factor within the Structure of Intellect Model. It probably involves a number of factors including the divergent production of semantic classes of response (semantic adaptive flexibility) and some memory as well as convergent thinking abilities. It most certainly involves some vocabulary abilities and thus would be expected to correlate with IQ. Nevertheless, none of these factors is antithetical to creativity and it was included as a possible test of the hypotheses under consideration.

1. The Cross-National Study. These results (cf. Tables 4A and 4B) indicate statistically non-significant differences between (a) the countries involved, (b) religious affiliation, and (c) their interaction. The direction of the differences between Catholics and Protestants are virtually zero in the U.S., Eire, and Scotland. The largest difference occurred in Northern Ireland and was in the hypothesized direction.

2. The American Study. There are no significant differences between the three American samples. The differences are minimal in every case; the largest are the result of the relatively low score of Catholics in public schools.

3. General Conclusions. This test of Word Association does not distinguish between:

a. the samples drawn from the various countries,

b. samples of Catholic and Protestant pupils within any of those countries, or

c. the three American samples based on combinations of religious affiliation and educational environment.

E. Word Fluency. This test is a measure of a divergent production ability though not an ability of high import for creative thinking. Like the former, Word Association, it is not dis-associated from creative thinking and was included to determine if it would distinguish between the various samples in the same way as the other divergent production abilities which are crucial for creative thinking.

1. The Cross-National Study. The results on which the following is based are presented in Tables 5A and 5B.

a. There are no significant differences between the means of the U.S., Northern Ireland, Eire, and Scotland. The test does not distinguish between the national samples.

b. There are significant differences between Catholics and Protestants in the United States, and Northern Ireland. In the latter case the results are in the hypothesized direction. However, this is the only instance in which Catholic pupils scored less than Protestant pupils. The differences were not in the hypothesized direction in the U.S., Eire, and Scotland. In the U.S. the difference was significant. We must conclude that the reasons on which the hypotheses concerned with Word Fluency were based are not sufficiently general to account for this range of results.

2. The American Study. The results of the American study are anomalous. However, it is not the fact that they are contrary to hypothesis which makes them so but the manner in which this has occurred. (cf. Tables 10A and 10B.)

a. Catholics in Catholic schools scored significantly higher than both Catholics in public schools and Protestants in public schools.

b. There was no difference between Catholic and Protestant pupils attending public schools.

We must conclude that there is a significant effect of Catholic education on Word Fluency in the United States. This is the only instance in which a result indicative of a specific effect of Catholic education was discovered in this research. The effect is contrary to hypothesis and in favor of Catholic education. Exactly why this has occurred is not clear.

Word Fluency, as noted, is a measure of the divergent production of symbolic units; the units in this case are words and symbolic implies "irrespective of meaning". Explanations of this finding were discussed earlier (cf. p. 221). On the basis of this finding we must conclude that Catholic education in the United States (and possibly elsewhere) has a significant facilitating effect on Word Fluency and thus on the divergent production of symbolic units in general which would include numbers among other units (cf. p. 176). Given some requirements, Catholic education seems to facilitate the expression of responses fulfilling those requirements. On the basis of the results of the Word Association test which involves the divergent production of semantic units (and

other factors), there is some indication that Catholic educational influences facilitate the divergent production of responses in restricted circumstances (i.e. conditions requiring certain aspects of the responses to be produced).

3. General Conclusions. Word Fluency does distinguish between Catholic and Protestant pupils in some instances.

a. The direction of the distinction is not systematic; the difference being culturally influenced.

b. The difference in the United States is not in the hypothesized direction and is attributeable to Catholic education rather than Catholicism.

F. Conformity. On the basis of a number of statements both theoretical and empirical (cf. Chapter Five) it is reasonable to assume the general antithesis of conformity and creativity. However, the contrary findings reported by Hyman and Stephens (1965) and the considerations of Chapter Three, led to the development of a similar test designed to incorporate some of the advantages of social conformity

measures and eliminate some of the disadvantages of the Hyman and Stephens persuasibility test. The object was to demonstrate the ability of a test of this type to distinguish between the two groups when made less impersonal and to re-examine the Hyman and Stephen findings of no difference between Catholics in Catholic schools and Protestants in public schools.

1. The Cross-National Study. The results of the cross-national comparisons are presented in Tables 6A and 6B.

a. There were no statistically significant differences between the means of the various countries. The Scottish sample evidenced the highest degree of conformity and the Irish sample the least.

b. The differences between the means of Catholic and Protestant students was not significant. Nevertheless, the differences were as hypothesized in the U.S., Eire, and Scotland. The exception was Northern Ireland; in that case Catholic pupils evidenced less conformity than Protestant pupils. Inspection of the components of this score indicated that while there was no difference between Northern Irish Catholics and Protestants in changes to the decision of the

group there was a large (the largest within country difference) difference in changes from the decision of the group. Catholic pupils changed away from the decision of the group significantly more than Protestant. Changes away from the decision of the group entail determining one's opinion, becoming cognizant that this opinion is the same as that of the majority of the group, and changing one's opinion. Assuming this to be correct, there are three possible explanations: random change, genuine re-alignment, or rebellion (counter-conformity). The first we may assume to be balanced in the two groups; there is no apparent reason for a greater incidence of genuine re-alignment in Catholics. There is, under the circumstances, an obvious explanation for Catholics evidencing greater rebellion against a group norm than Protestants in Northern Ireland (i.e. Catholics in Northern Ireland can often anticipate the position of their religious sub-culture by maintaining the converse of majority opinion. (cf. Jenkins & MacRae, 1967). However, this remains to be demonstrated in terms of a test of conformity.

2. The American Study. The results of this study (cf. Tables 12A and 12B) are again not statistically significant. However, differences are quite large and in the hypothesized direction in every case.

a. Catholics in Catholic schools evidence more conformity than Catholics in public schools. This suggests the possibility of an effect attributable to Catholic education.

b. Catholics in public schools evidence considerably more conformity than Protestants in public schools. This suggests an effect of Catholicism in general.

3. General Conclusions. Nothing can be "concluded" on the basis of these results. However, they do provide ample justification for another attempt to make these distinctions with an expanded version of the same test.

From these results it can be seen that there is an effect of Catholicism in general and Catholic education in particular on conformity and these effects are both in the hypothesized direction. The reason for the failure of these differences to reach statistical significance is probably the restricted range of possible changes. With only three problems and thus 12 possible changes, the range of changes to the group minus changes from the group was probably not sufficiently large.

G. Differences. The hypothesis that the differences between Catholic and Protestant pupils would be greatest in the United States was upheld in every case but one, Word Association. (cf. Table 13). Since it is differences which are being compared, cross-cultural effects on absolute scores are minimized. In comparing differences we are then, in fact, comparing differential effects of various cultures on various factors of creativity in Catholics and Protestants.

One dissimilarity between the American situation as opposed to the others is that in Northern Ireland, Eire and Scotland Protestants attending Protestant schools are subject to significant religious influence in school. In the United States religious instruction in any sense is virtually anathema in public education. It was hypothesized that this would accentuate the difference in the U.S. On the basis of these comparisons, we conclude that this has been the case. Wherever there is a greater official religious influence in public education systems the difference between Catholic pupils in Catholic schools and Protestant pupils in non-Catholic or Protestant schools are decreased.

H. Supplementary Observations. A number of supplementary observations are worth noting. Irish and Scottish Catholics consistently scored higher on originality, ideational fluency and adaptive flexibility than American and Northern Irish Catholics. On the basis of these three measures Irish Catholics evidence the highest scores on average. American and Irish Protestants always evidenced higher scores on these three measures than did Northern Irish and Scottish Protestants. Over all the tests employed the American and Irish sample scored higher than the others with one exception - Word Fluency which yielded consistently negative results.

II. DISCUSSION

A. Significant Findings. The three principal measures of creativity utilized in these studies were Originality, Ideational Fluency, and Spontaneous Flexibility. With respect to these factors straightforward results were obtained. In the United States and Northern Ireland Catholic pupils scored significantly lower than Protestant pupils on each of these measures. (In Eire, Catholic pupils scored significantly lower than Protestant pupils on Originality.) There were no significant differences in terms of any of these factors with respect to Scottish Catholics and Protestant pupils. The fact that there are a disproportionately low number of Roman Catholics represented in areas of endeavor placing a premium on creativity suggests the relative lack of mental abilities critical for creative production. This deficiency has been demonstrated to exist in Catholic pupils attending Catholic schools in a variety of social contexts. At the same time these results indicate that the absence of these abilities is by no means universal; there are contexts in which there is virtually no difference between Catholic and Protestant pupils.

One factor which was hypothesized to influence the extent of Catholic-Protestant differences was religious education in the state school system. This study has demonstrated this to be to some extent true. The second factor which was hypothesized to contribute to these differences was Catholic education.

Within the United States the results for Originality, Ideational Fluency and Spontaneous Flexibility clearly indicate that Catholic education is not a salient factor in preventing the development of these abilities. In no case were Catholic students in Catholic schools significantly less creative than Catholic students in Non-Catholic schools. Two points are of import here with respect to the interpretation of these results.

1. Quin (1965) found significant differences in Dogmatism between all three groups: Catholics in Catholic schools scored significantly higher than Catholics in public schools who in turn scored significantly higher than Protestants in public schools. Although we have based our hypotheses on the antithesis of dogmatism and creativity our results indicate no differences between the two Catholic groups. The reason for this may have been selection procedures discussed below. However, the results are not anomalous. Dogmatism and creativity might well be antithetical without being

mutually exclusive. One does not expect to find no creative authoritarians.

Quin went to public schools and selected Catholic students. A sample of the same type was gathered in this study by going to Catholic sponsored evening classes for Catholics attending public schools. The Catholics in this study who attended public schools were quite probably more religious (i.e. more "Catholic") than the Catholics in the Quin study. It is not likely that most Catholics in public schools attend these classes. Whether or not this difference in selection was significant is not clear.

The results indicating no negative effect of Catholic education could be disputed on these grounds and those provided by other studies indicting Catholic education. However, they are defensible on the grounds that there is little chance that many of the Catholics in our sample would be defined as anything else by most of the measures discussed in Chapter Two. There is no suggestion of anything beyond calling oneself Catholic as a criterion for selecting "Catholics" from public schools in the Quinn study.

Another question must be dealt with in comparing the findings of this study with the Quin findings. The differences in the latter study may have been influenced by selection difficulties.

The subjects came from two public and two Catholic high schools in the New York Metropolitan area. The basis of selection was availability (that is the principal agreed to allow his school to be used). In all cases, admission was accomplished through introduction by a third party known to both the principal involved and the investigator. Because of the nature of the study, purely random selection of the schools was not possible. The mere mention of religion generally sufficed to end any further discussion on testing the school's students. (This reluctance may account for the scarcity of comparative study.) Permission was denied in two of the four Catholic schools and in seven of the nine public schools solicited. In spite of this, there was no reason to believe that the schools used were not representative of their respective types. Quin, 1965, p. 24.

In the study reported herein permission was secured for testing in the Catholic schools and in the Catholic sponsored religious education classes in the first instance. Permission for testing in the public school was secured with no trouble. The Director of Educational Research for the Milwaukee school district actually selected the schools which best fit approx-

imate age, IQ, and socio-economic requirements. Subjects in this study were closely matched for IQ. This was not the case in the Quin study.

2. The findings reported herein are evidence for the fact that Catholic education does not inhibit creativity. This is obviously not a general absolution. Given the negative results of the few studies executed in the U.S. comparing Catholic and Protestant students or public and parochial education, there would appear to be a need for significantly more research of this kind. In spite of the fact that there were no school differences, the considerable Catholic-Protestant differences were found again in this study.

B. Anomalous Findings. The principal inconsistency herein is the significantly greater Word Fluency scores of Catholic students in Catholic schools and the greatly depressed scores of Catholic students attending public schools in the U.S. on this measure. Word Fluency, the divergent production of symbolic units though not of particular import for creative production, is certainly not antonymous to creative production. In a positive sense this result could be construed as a successful re-education of Catholic students

in Catholic schools. In a negative sense they suggest an over-emphasis on a factor of secondary importance. This result does suggest that further research is needed to establish the relative importance of Guilford's 24 factors of divergent production for creative production.

C. Finally, these results are in substantial agreement with those of previous studies of both authoritarianism-conformity vs. creativity and Catholics in Catholic schools vs. Protestants in public schools in the U.S.

1. Creativity and authoritarianism-conformity are antithetical. Previously this had been demonstrated by:

- a. comparing individuals on the basis of performance in Asch-type situations and on various measures or rating procedures of creativity and

- b. by comparing groups on the basis of general high level creative productivity and measures of authoritarianism.

This research has demonstrated the antithesis by comparing groups on the basis of general authoritarianism-conformity and measures of specific mental ability factors of importance in creative thinking. Catholics, a group demonstrably more authoritarian and conforming evidence significantly less originality, ideational fluency, and spontaneous flexibility in two of the four countries involved. The fact that significant differences were absent in the remaining two indicates the importance of social factors in the facilitation and inhibition of creativity.

2. Catholic education does not significantly inhibit the development of creative thinking abilities. Although there are very few studies reported in the literature which directly compare the two school systems (Catholic and public) those which do exist generally favor the Protestants in public schools over the Catholics in Catholic schools on a variety of achievement, critical thinking, and authoritarianism measures. The implication is that Catholic education is responsible for the disfavorable comparisons of Catholic with Protestant high level creativity. By controlling type of school and religion this research has demonstrated that Catholicism in general rather than Catholic education in particular is the responsible factor.

Adams, E.W., Arnold-Brunswick, E. & Lavidan, J. 1934.
Sanford, R.B. The Pathological Psychology.
Harper & Bros., 1934.

Allport, G.W. Source Psychology. Journal of Psychology, 1924, 1924.

Allport, G.W. The J. and J. Psychology of Personality.
V. Soc. Psychology, 1934, 1934.

Allport, G.W. The Nature of Psychology. Psychology.
Addison-Wesley, 1934.

REFERENCES

Allport, G.W. and Brown, J.M. Case Studies in Psychology.
J. Psychology, 1934, 22, 1-39.

Allport, G.W., Allport, G.W. and Brown, J.M. The Psychology
of the Post-war Generation. Journal of Psychology, 1934,
22, 1-39.

Allport, G.W. & J. and J. Psychological Psychology.
Addison-Wesley, 1934, 1934.

Allport, G.W. Psychology of Psychology. Journal of Psychology, 1934,
22, 1-39.

Allport, G.W. Psychological Psychology. Journal of Psychology, 1934,
22, 1-39.

- Adorno, T.W., Frenkel-Brunswick, E., Levinson, D.J., and Sanford, R.N. The Authoritarian Personality. New York: Harper & Bros., 1950.
- Allport, F.H. Social Psychology. Boston: Houghton-Mifflin, 1924.
- Allport, F.H. The J Curve Hypothesis of Conforming Behavior. J. Soc. Psychol., 1934, 5, 141-183.
- Allport, G.W. The Nature of Prejudice. Cambridge, Mass.: Addison-Wesley, 1954.
- Allport, B.W. and Kramer, B.M. Some Roots of Prejudice. J. Psychol., 1946, 22, 9-39.
- Allport, G.W., Gillespie, J.M. and Young, J. The Religion of the Post-War College Student. J. Psychol., 1948, 25, 3-33.
- Allport, G.W. and Ross, M. Personal Religious Orientation and Prejudice. J. Personal. Soc. Psychol., 1967, 5(4), 432-433.
- Amatora, S.M. Similarity in Teacher and Pupil Personality. J. Psychol, 1954, 37, 45-50.
- Anderson, C.C. A Developmental Study of Dogmatism During Adolescence with References to Sex Differences. J. Abnorm. Soc. Psychol., 1962, 65(2), 132-135.

Anderson, H.H. (Ed.) Creativity and Its Cultivation.
New York: Harper & Bros., 1959.

Anderson, H.H. Creativity as Personality Development. In:
Creativity and Its Cultivation, H.H. Anderson, 1959.

Anderson, H.H. Creativity in Perspective. In: Creativity
and Its Cultivation, H.H. Anderson, 1959.

Andrews, P. The Process of Composition. Irish J. Educ.
Psychol., 1967, 1(1), 47-60.

Argyle, M. The Scientific Study of Social Behavior.
London: Methuen, 1957.

Argyle, M. Religious Behavior. London: Routledge & Kegan
Paul, 1958.

Asch, S.E. The Doctrine of Suggestion, Prestige, and
Imitation in Social Psychology. Psychol. Rev., 1948,
55, 250-277.

Asch, S.E. Social Psychology. New York: Prentice Hall, 1952.

Asch, S.E. Studies of Independence and Conformity. I.
A Minority of One Against a Unanimous Majority. Psychol.
Monog., 1956, 70, No. 9.

Asch, S.E. Effects of Group Pressure Upon the Modification
and Distortion of Judgments. In: Readings in Social
Psychology, E.E. Maccoby, T.M. Newcomb and E.L. Hartley,
1958, 174-182.

Asch, S.E. Issues in the Study of Social Influences on Judgment. In: Conformity and Deviation, I.A. Berg and B.M. Bass, 1961, 143-158.

Bakan, D. The Test of Significance in Psychological Research. Psychol. Bull., 1966, 66(6), 423-437.

Barocas, R. and Goslow, L. Religious Affiliation, Religious Activities, and Conformity. Psychol. Reps., 1967, 20, 366.

Barritt, D.P. and Carter, C.F. The Northern Ireland Problem. London: Oxford Univ. Press, 1962.

Barron, F. Personality Style and Perceptual Choice. J. Personal., 1952, 20, 385-401.

Barron, F. Complexity-Simplicity as a Personality Dimension. J. Abnorm. Soc. Psychol., 1953, 48, 163-172.

Barron, F. Some Personality Correlates of Independence of Judgment. J. Personal., 1952-3, 21, 287-297.

Barron, F. The Disposition Toward Originality. J. Abnorm. Soc. Psychol., 1955, 51, 478-485.

Barron, F. Originality in Relation to Personality and Intellect. J. Personal., 1956-7, 25, 731-742.

Barron, F. Creativity and Psychological Health.

New York: D. Van Nostrand, 1963.

Barron, F. and Welsh, G.S. Artistic Perception as a Possible Factor in Personality Style: Its Measurement by a Figure Preference Test. J. Psychol., 1952, 33, 199-203.

Bass, B.M. Authoritarianism and Acquiescence. J. Abnorm. Soc. Psychol., 1955, 51, 616-623.

Bass, B.M. Conformity, Deviation, and a General Theory of Interpersonal Behavior. In: Conformity and Deviation, I.A. Berg and B.M. Bass, 1961, 38-100.

Becker, S.W., Lerner, M.J. and Carroll, J. Conformity as a Function of Birth Order, Payoff and Type of Group Pressure. J. Abnorm. Soc. Psychol., 1964, 69(3), 318-323.

Beloff, H. Two Forms of Social Conformity: Acquiescence and Conventionality. J. Abnorm. Soc. Psychol., 1958, 56(1), 99-104.

Berg, I.A. Measuring Deviant Behavior by Means of Deviant Response Sets. In: Conformity and Deviation, I.A. Berg and B.M. Bass, 1961, 328-379.

Berg, I.A. and Bass, B.M. (Eds.) Conformity and Deviation. New York: Harper, 1961.

- Berkowitz, L. and Lundy, R.M. Personality Characteristics Related to Susceptibility to Influence by Peers or Authority Figures. J. Personal., 1956-7, 25, 306-316.
- Bernberg, R.E. A Measure of Social Conformity. J. Psychol., 1955, 39, 89-96.
- Blake, R.R. and Brehm, J.W. The Use of Tape Recording to Simulate a Group Atmosphere. J. Abnorm. Soc. Psychol., 1954, 49, 311-313.
- Blake, R.R., Helson, H., and Mouton, J. The Generality of Conformity Behavior as a Function of Factual Anchorage, Difficulty of Task and Amount of Social Pressure. J. Personal., 1956-7, 25, 294-305.
- Blake, R.R. and Mouton, J.S. Competition, Communication, and Conformity. In: Conformity and Deviation, I.A. Berg and B.M. Bass, 1961, 199-229.
- Blake, R.R. and Mouton, J.S. Conformity, Resistance, and Conversion. In: Conformity and Deviation, I.A. Berg and B.M. Bass, 1961, 1-37.
- Block, J. and Block, J. An Interpersonal Experiment on Reactions to Authority. Hum. Relat., 1952, 5, 91-98.
- Boyce, P.R. The Visual Perception of Movement in the Absence of an External Frame of Reference. Optica Acta, 1965, 12(1), 47-54.

Brill, A.A. (Ed.) The Basic Writings of Sigmund Freud.
New York: Random House, 1938.

Brogan, D.W. U.S.A. An Outline of the Country, Its People
and Institutions. London, 1941.

Brogden, H.E. and Sprecher, T.B. Criteria of Creativity.
In: Creativity: Progress and Potential. C.W. Taylor,
1964, 155-176.

Bronowski, J. Imagination and the University. Toronto:
Univ. Toronto Press, 1963.

Brown, D.G. and Lowe, W.L. Religious Beliefs and Personality
Characteristics of College Students. J. Soc. Psychol.,
1951, 33, 103-129.

Brown, L.B. A Study of Religious Belief. Brit. J.
Psychol., 1962, 53(3), 259-272.

Brown, L.B. and Pallant, D.J. Religious Belief and Social
Pressure. Psychol. Reps., 1962, 10, 813-814.

Brown, R. Social Psychology. New York: The Free Press, 1965.

Bruner, J.S. On Knowing: Essays for the Left Hand.
Cambridge Mass.: Harvard Univ. Press, 1962.

Campbell, D.T. Conformity in Psychology's Theories of Acquired Behavioral Dispositions. In: Conformity and Deviation, I.A. Berg and B.M. Bass, 1961, 101-142.

Cannon, W.B. The Role of Chance in Discovery. *Scient. Mon.*, 1950, 50, 204-209.

Carlson, H.B. Attitudes of Undergraduate Students. *J. Soc. Psychol.*, 1934, 5, 202-212.

Cattell, R.B. The Personality and Motivation of the Researcher from Measurements of Contemporaries and from Biography. Unpublished manuscript from Laboratory of Personality Assessment, Univ. of Illinois.

Cattell, R.B. and Drevdahl, J.E. A Comparison of the Personality Profile (16 P.F.) of Eminent Researchers with that of Eminent Teachers and Administrators and of the General Population. *Brit. J. Psychol.*, 1955, 46, 248-261.

Cautela, J. and Vitro, F. The Effects of Instruction on the Appearance of the Autokinetic Effect. *J. Psychol.*, 1964, 58, 85-88.

Centers, R. The Psychology of Social Classes. Princeton: Univ. Press, 1949.

Centers, R. and Horowitz, M. Social Character and Conformity: a Differential in Susceptibility. *J. Soc. Psychol.*, 1963, 60, 343-349.

Chambers, J.A. Relating Personality and Biographical Factors to Scientific Creativity. Psychol Monog., 1964, 78(7), No. 584.

Chassell, L.M. Tests for Originality. J. Educ. Psychol., 1916, 317-329.

Christensen, P.R. and Guilford, J.P. and Wilson, R.C. Relations of Creative Responses to Working Time and Instructions. J. Exp. Psychol., 1957, 53, 82-88.

Cicirelli, V.G. Form of the Relationship Between Creativity and Academic Achievement. J. Educ. Psychol., 1965, 56, 6, 303-308.

Clark, C.M., Veldman, D.J. and Thorpe, J.S. Convergent and Divergent Thinking Abilities in Talented Adolescents. J. Educ. Psychol., 1965, 56(3), 157-163.

Clark, W.H. A Study of Some of the Factors Leading to Achievement and Creativity, with Special Reference to Religious Skepticism and Belief. J. Soc. Psychol., 1955, 41, 57-69.

Clark, W.H. Religion as a Response to the Search for Meaning: Its Relation to Skepticism and Creativity. J. Soc. Psychol., 1963, 60, 127-137.

Corteen, R. The Autokinetic Effect and Signal Detection. J. Psychol. (in press).

Cross, P.G., Cattell, R.B., and Butcher, H.J. The Personality Pattern of Creative Artists. Brit. J. Educ. Psychol., 1967, 37(3), 292-299.

Crutchfield, R.S. Conformity and Character. In: Current Perspectives in Social Psychology, E.P. Hollander and R.G. Hunt, 1963, 398-408. (Reprinted from: Amer. Psychol., 1955, 10, 191-198.)

Crutchfield, R.S. Conformity and Creative Thinking. In: Contemporary Approaches to Creative Thinking, H.E. Gruber, G. Terrell and M. Wertheimer, 1962, 120-140.

D'Amour, O.C. The Status of Catholic Education. Cath. Sch. J., 1960, 60, 69-72.

David, H.P. and Brenglemann, J.C. (Eds.) Perspectives in Personality Research. New York: Crosby Lockwood, 1960.

Dearborn, G.V. A Study of Imaginations. Amer. J. Psychol., 1898, 9(2), 183-190.

de Charms, R. and Moeller, G. Values Expressed in American Children's Readers: 1800-1950. J. Abnorm. Soc. Psychol., 1962, 64, 136-142.

Dentler, R.A. and Mackler, B. Originality: Some Social and Personal Determinants. Behav. Sci., 1964, 9, 1-7.

- Deutsch, M. and Krauss, R.M. Theories in Social Psychology.
London: Basic Books, 1965.
- Drevdahl, J.E. Factors of Importance for Creativity. J.
Clin. Psychol., 1956, 12, 21-26.
- Edwards, M.P. and Tyler, L.E. Intelligence, Creativity and
Achievement in a Nonselective Public Junior High
School. J. Educ. Psychol., 1965, 56(2), 96-99.
- Endler, N.S. Social Conformity in Perception of the Auto-
kinetic Effect. J. Abnorm Soc. Psychol., 1960, 61(3),
489-490.
- Erikson, E.H. Childhood and Society. New York: Norton, 1950.
- Eyring, H. Scientific Creativity. In: Creativity and Its
Cultivation, H.H. Anderson, 1959.
- Eysenck, H.J. General Social Attitudes. J. Soc. Psychol.,
1944, 19, 207-227.
- Eysenck, H.J. The Structure of Human Personality.
London: Methuen, 1953.
- Eysenck, H.J. Psychology of Politics. London: Routledge,
1954.

- Ferguson, L.W. Socio-Psychological Correlates of the Primary Attitude Scales: I. Religionism; II. Humanitarianism. J. Soc. Psychol., 1944, 19, 81-98.
- Festinger, L. A Theory of Cognitive Dissonance. Evanston: Row, Peterson & Co., 1957.
- Festinger, L. Conflict, Decision and Dissonance. London: Tavistock, 1964.
- Festinger, L. Informal Social Communication. In: Perspectives in Social Psychology, E.P. Hollander and R.G. Hunt, 1963, 409-420. (Reprinted from: Psychol. Rev., 1950, 57, 271-282.)
- Flescher, I. Anxiety and Achievement of Intellectually Gifted and Creatively Gifted Children. J. Psychol., 1963, 56, 251-268.
- Forgus, R.H. Perception. New York: McGraw-Hill, 1966.
- Fox, J.T. Authoritarianism and the St. Ambrose College Student. Relig. Educ., 1965, 40(4), 272-276.
- Freedman, J.L. Increasing Creativity By Free Association Training. J. Exp. Psychol., 1965, 69(1), 89-91.
- Friedrich, C.J. (Ed.) Authority. Cambridge, Mass.: Harvard Univ. Press, 1958.

Friedrich, C.J. Authority, Reason, and Discretion. In:
Authority, C.J. Friedrich, 1958.

Fromm, E. Escape From Freedom. New York: Farrar & Rinehart,
1941.

Fromm, E. The Creative Attitude. In: Creativity and Its
Cultivation. H.H. Anderson, 1959.

Fry, C.L. The Religious Affiliations of American Leaders.
Scient. Mon., 1933, 36, 241-249.

Frey, R.L., Spruill, J. and Stritch, T.M. The Effect of
Group Size on Public and Private Coalescence, Efficiency,
and Change. J. Soc. Psychol., 1964, 62, 131-139.

Galton, R. Hereditary Genius: An Inquiry into its Laws
and Consequences. London: MacMillan, 1914.

Getzels, J.W. and Jackson, P.W. Creativity and Intelligence.
New York: Wiley, 1962.

Getzels, J.W. and Jackson, P.W. Family Environment and
Cognitive Style: A Study of Sources of Highly Intelligent
and Highly Creative Adolescents. Amer. Sociol. Rev.,
1961, 26, 351-359.

Ghiselin, B. (Ed.) The Creative Process. New York:
Mentor, 1955.

- Golann, S.E. The Psychological Study of Creativity. Psychol. Bull., 1963, 60(6), 548-565.
- Golann, S.E. The Creativity Motive. J. Personal., 1962, 30, 588-600.
- Gordon, W.J.J. Synectics: The Development of Creative Capacity. New York: Harper & Row, 1961.
- Gorfein, D.S. The Effects of a Non-Unanimous Majority on Attitude Change. J. Soc. Psychol., 1964, 63, 333-338.
- Gough, H.G. Studies in Social Intolerance. J. Soc. Psychol., 1951, 33, 263-269.
- Gregory, I.L. Eye and Brain: The Psychology of Seeing. London: World Univ. Library, 1966.
- Gruber, H.E., Terrell, G. and Wertheimer, M. (Eds.) Contemporary Approaches to Creative Thinking. New York: Atherton Press, 1962.
- Gruen, W. Internal and External Conformity and Some Common American Attitudes. Psychol. Reps., 1961, 8, 368-369.
- Gruen, W. The Utilization of Creative Potential in Our Society. J. Counsel. Psychol., 1962, 9(1), 79-83.
- Gruen, W. The Composition and some Correlates of American Core Culture. (Unpublished manuscript.)

Gruen, W. Preference for new Products and Its Relationship to Different Measures of Conformity. (Unpublished manuscript.)

Guilford, J.P. Creativity. Amer. Psychol., 1950, 5, 444-454.

Guilford, J.P. The Structure of Intellect. Psychol. Bull., 1956, 53, 267-293.

Guilford, J.P. A Revised Structure of Intellect. Rep. Psychol. Lab. Univ. Southern Calif., 1957, No. 19.

Guilford, J.P. Traits of Creativity. In: Creativity and Its Cultivation, H.H. Anderson, 1959.

Guilford, J.P. Factors that Aid and Hinder Creativity. In: Readings in Educational Psychology, J.M. Seidman, 1965, 196-206. (Reprinted from: Teach. Coll. Rec., 1962, 63, 380-392.)

Guilford, J.P. Fundamental Statistics in Psychology and Education. New York: McGraw-Hill, 1965 (4th ed.).

Guilford, J.P. The Nature of Human Intelligence. New York: McGraw-Hill, 1967. (a)

Guilford, J.P. Some Theoretical Views of Creativity. In: Contemporary Approaches to Psychology, H.Helson and W.Bevan, 1967, 419-459. (b)

Guilford, J.P. Creativity: Yesterday, Today and Tomorrow.
J. Creat. Behav., 1967, 1(1), 3-14. (c)

Guilford, J.P., Berger, R.M. and Christensen, P.R.
A Factor Analytic Study of Planning. I. Hypotheses
and Description of Tests. Rep. Psychol. Lab. Univ.
Southern Calif., 1954, No. 10.

Guilford, J.P., Berger, R.M. and Christensen, P.R.
A Factor Analytic Study of Planning. II. Administration
of Tests and Analysis of Results. Rep. Psychol.
Lab. Univ. Southern Calif., 1955, No. 12.

Guilford, J.P. and Christensen, P.R. A Factor Analytic
Study of Verbal Fluency. Rep. Psychol. Lab. Univ.
Southern Calif., 1956, No. 17.

Guilford, J.P., Christensen, P.R., Frick, J.W. and Mer-
rifield, P.R. The Relations of Creative-Thinking
Aptitudes to Non-Aptitude Personality Traits. Rep.
Psychol. Lab. Univ. Southern Calif., 1957, No. 20.

Guilford, J.P., Christensen, P.R., Frick, J.W. and Mer-
rifield, P.R. Factors of Interest in Thinking.
J. Gen. Psychol., 1961, 65(1), 39-56.

Guilford, J.P., Frick, J.W., Christensen, P.R. and Mer-
rifield, P.R. A Factor Analytic Study of Flexibility
in Thinking. Rep. Psychol. Lab. Univ. Southern Calif.,
1957, No. 18.

Guilford, J.P., Hertzka, A.F., Berger, R.M. and Christensen, P.R. A Factor Analytic Study of Evaluative Abilities. I. Hypotheses and Description of Tests. Rep. Psychol. Lab. Univ. Southern Calif., 1952, No. 7.

Guilford, J.P., Hertzka, A.F., and Christensen, P.R. A Factor Analytic Study of Evaluative Abilities. II. Administration of Tests and Analysis of Results. Rep. Psychol. Lab. Univ. Southern Calif., 1953, No. 9.

Guilford, J.P. and Merrifield, P.R. The Structure of Intellect Model: Its Uses and Implications. Rep. Psychol. Lab. Univ. Southern Calif., 1960, No. 24.

Guilford, J.P., Merrifield, P.R. and Cox, A.B. Creative Thinking in Children at the Junior High School Levels. Rep. Psychol. Lab. Univ. Southern Calif., 1961, No. 26.

Guilford, J.P., Wilson, R.C. and Christensen, P.R. A Factor Analytic Study of Creative Thinking. II. Administration of Tests and Analysis of Results. Rep. Psychol. Lab. Univ. Southern Calif., 1952, No. 8.

Guilford, J.P., Wilson, R.C., Christensen, P.R., and Lewis, D.J. A Factor Analytic Study of Creative Thinking. I. Hypotheses and Description of Tests. Rep. Psychol. Lab. Univ. Southern Calif., 1951, No. 4.

Hammer, E.F. Creativity and Feminine Ingredients in Young Male Artists. Percept. Mot. Skills, 1964, 19(2), 414.

Harper, F.B.W. and Tuddenham, R.D. The Sociometric Composition of the Group as a Determinant of Yielding to a Distorted Norm. J. Psychol., 1964, 58, 307-311.

Hasan, P. Creativity and Intelligence. Unpublished B.Ed. Thesis, Univ. of Edinburgh.

Hasan, P. and Butcher, H.J. Creativity and Intelligence: A Partial Replication with Scottish Children of the Getzels and Jackson Study. Brit. J. Psychol., 1966, 57, 129-135.

Hays, W.L. Statistics for Psychologists. New York: Holt, Rinehart & Winston, 1963.

Helson, H., Blake, R.R., Mouton, J.S., and Olmstead, J.A. Attitudes as Adjustments to Stimulus, Background and Residual Factors. J. Abnorm. Soc. Psychol., 1956, 52, 314-322.

Helson, H. and Bevan, W. Contemporary Approaches to Psychology. Princeton: D. Van Nostrand, 1967.

Hendel, C. An Exploration of the Nature of Authority. In: Authority, C.J. Friedrich, 1958.

Hilgard, E.A. Creativity and Problem Solving. In:
Creativity and Its Cultivation, H.H. Anderson, 1959.

Hill, R.E. An Investigation of the Educational Development
of Selected Iowa Secondary School Pupils from Varied
Elementary School Environments. New York: Yearb. Nat.
Counc. Meas. Used in Educ., 1957.

Hill, R.E. Scholastic Success of College Freshmen
from Parochial and Public Secondary Schools. Sch. Rev.,
1961, 69, 60-66.

Hoepfner, R. and Guilford, J.P. Figural, Symbolic, and
Semantic Factors of Creative Potential in Ninth-Grade
Students. Rep. Psychol. Lab. Univ. Southern Calif.,
1960, No. 35.

Hoffman, M.L. Conformity as a Defense Mechanism and a
Form of Resistance to Genuine Group Influence. J.
Personal., 1956-7, 25, 412-424.

Holland, J.L. Some Limitations of Teacher Ratings as
Predictors of Creativity. J. Educ. Psychol., 1959,
50(5), 219-223.

Hollander, E.P. Reconsidering the Issue of Conformity
in Personality. In: Perspectives in Personality
Research, H.P. David and J.C. Brenglemann, 1960.

Hollander, E.P. Conformity, Status, and Idiosyncrasy
Credit. In: Current Perspectives in Social Psychology,
E.P. Hollander and R.G. Hunt, 1963. (Reprinted from:
Psychol. Rev. 1958, 65, 117-127.

Hollander, E.P. and Hunt, R.G. (Eds.) Current Perspectives in Social Psychology. New York: Oxford Univ. Press, 1963.

Hollander, E.P. and Willis, R.H. Some Current Issues in the Psychology of Conformity and Nonconformity. Psychol. Bull., 1967, 68(1), 62-76.

Houston, J.P. and Mednick, S.A. Creativity and the Need for Novelty. J. Abnorm. Soc. Psychol., 1963, 66, 137-141.

Hovland, C.I. and Janis, I.L. (Eds.) Personality and Persuasibility. New Haven: Yale Univ. Press, 1959.

Hudson, L. Contrary Imaginations. London: Methuen, 1960.

Hunt, J. McV. Traditional Personality Theory in Light of Recent Evidence. Amer. Scient., 1965, 53, 60-96.

Huntington, E. and Whitney, L.F. The Builders of America. New York: Morrow, 1927.

Hyman, B. and Stephens, M.L. Differences in General Persuasibility to Peer Group Pressure Between Catholic High School and Public High School Students. J. Soc. Psychol., 1965, 66, 73-78.

Iscoe, I. and Pierce-Jones, J. Divergent Thinking, Age and Intelligence in White and Negro Children. Child Development, 1964, 35, 785-797.

Jahoda, M. Conformity and Independence: A Psychological Analysis. Hum. Relat., 1959, 12, 99-120.

Jenkins, R. and MacRae, J. Religion, Conflict and Polarization in Northern Ireland. Unpublished manuscript.

Jones, E. Problems of Partition and Segregation in Northern Ireland. J. Conflict Resolution, 1960, 96-105.

Katz, F.M. The Meaning of Success: Some Differences in Value Systems of Social Classes. J. Soc. Psychol., 1964, 62, 141-148.

Kelman, H.C. Processes of Opinion Change. Pub. Op. Quart., 1961, 25, 57-78.

Kelman, H.C. Three Processes of Social Influence. In: Current Perspective in Social Psychology, E.P. Hollander and R.G. Hunt, 1963, 454-462.

Kirkpatrick, C. Religion and Humanitarianism. Psychol. Monog., 1949, No. 9.

Knapp, R.H. and Goodrich, H.B. Origins of American Scientists. Chicago: Univ. Chicago Press, 1952.

Knapp, R.H. and Greenbaum, J.J. The Younger American Scholar: His Collegiate Origins. Chicago: Univ. Chicago Press, 1953.

Knight, K.E. The Effect of Effort on Behavioral Rigidity in a Luchins Water Jar Task. J. Abnorm. Soc. Psychol., 1963, 66(2), 190-192.

Koestler, A. The Act of Creation. New York: MacMillan, 1964.

Koos, L.V. Private and Public Secondary Education. Chicago: Univ. Chicago Press, 1931.

Kris, E. On Preconscious Mental Processes. Psychoanal. Quart., 1952, 19, 540-550.

Kubie, L.S. Neurotic Distortion of the Creative Processes. Lawrence, Kans.: Univ. Kansas Press, 1958.

Kubie, L.S. Some Unresolved Problems of the Scientific Career. Amer. Scient., 1953, 41(4), 596-613.

- Lasky, J.J. The Effect of Prestige Suggestion and Peer Standard on California F Scale Scores. Psychol. Reps., 1962, 11, 187-191.
- Lasswell, H.D. The Social Setting of Creativity. In: Creativity and Its Cultivation, H.H. Anderson, 1959.
- Lazarsfeld, P.F. The People's Choice. New York: Duell, Sloan and Pearce, 1944.
- League, B.J. and Jackson, D.N. Conformity, Veridicality, and Self-Esteem. J. Abnorm. Soc. Psychol., 1964, 68(1), 113-115.
- Liberty, P.E. Authoritarianism and Attraction to Occupations Varying in Levels of Prestige and Competence. Psychol. Reps., 1964, 14, 958.
- Lieberman, M. Parochial Schools and Public Leadership. Nat. Cath. Educ. Assoc. Bull., 1960, 57, 239-248.
- Lipset, S.M. Opinion Formation in a Crisis Situation. Pub. Op. Quart., 1953, 17, 20-46.
- Lipset, S.M. The Psychology of Voting: An Analysis of Political Behavior. In: Handbook of Social Psychology, G. Lindzey, 1954.
- Lindgren, H.C. Educational Psychology in the Classroom. New York: Wiley, 1962.

Lindgren, H.C. Authoritarianism, Independence and Child Centered Practices in Education: A Study of Attitudes. Psychol. Reps., 1962, 10, 747-750.

Lindzey, G. Handbook of Social Psychology. London: Addison-Wesley, 1954.

Lindzey, G. The Assessment of Human Motives. New York: Rinehart & Winston, 1958.

Lubell, S. Revolt of the Moderates. New York: Harper, 1956.

Maccoby, E.E., Newcomb, T.M. and Hartley, E.L. (Eds.) Readings in Social Psychology. London: Methuen, 1958.

Mackler, B. and Shontz, F.C. Life Styles and Creativity: A Review. J. Psychol., 1964, 58, 205-214.

Mackworth, N.H. Originality. Amer. Psychol., 1965, 20(1), 51-66.

Macnamara, J. Bilingualism and Primary Education. Edinburgh: Edinburgh Univ. Press, 1966.

Madaus, G.F. A Cross-Cultural Comparison of the Factor Structure of Selected Tests of Divergent Thinking. J. Soc. Psychol., 1967, 73(1), 13-21.

Maltzman, I. On the Training of Originality. Psychol. Rev., 1960, 67, 229-242.

Maltzman, I., Belloni, M., and Fishbein, M. Experimental Studies of Associative Variables in Originality. Psychol., Monog., 1964, 78, No. 3.

Maltzman, I., Bogartz, W., and Breger, L. A Procedure for Increasing Word Association Originality and Its Transfer Effects. J. Exp. Psychol., 1958, 56(8), 392-398.

Maltzman, I., Brooks, L.O., Bogartz, W., and Summers, S.S. The Facilitation of Problem Solving by Prior Exposure to Uncommon Responses. J. Exp. Psychol., 1959, 56(5), 399-406.

Maltzman, I. and Gallup, H.F. Comments on 'Originality' in Free and Controlled Association Responses. Psychol. Reps., 1964, 14, 573-574.

Maltzman, I. and Simon, S. A Recency Effect Between Word Association Lists. Psychol. Reps., 1959, 5, 632.

Maltzman, I., Simon, S. and Licht, L. Verbal Conditioning of Common and Uncommon Word Associations. Psychol. Reps., 1962, 10, 363-369.

Maltzman, I., Simon, S., Raskin, D., and Licht, L. Experimental Studies in the Training of Originality. Psychol. Monog., 1960, 74(6), No. 493.

Marino, C.J. Theoretical Origins of a Modification of the Asch Test. *Papers in Psychol.*, 1967, 1(2), 77-81.

Marino, C.J. A Modification of the Asch Experiment. *J. Soc. Psychol.*, (in press).

Maslow, A.H. Creativity in Self Actualizing People.
In: Creativity and Its Cultivation, H.H. Anderson, 1959.

Maslow, A.H. Toward A Psychology of Being. London:
D. Van Nostrand, 1962.

May, R. The Nature of Creativity. In: Creativity and Its Cultivation, H.H. Anderson, 1959.

Meade, R.D. and Whittaker, J.O. A Cross-Cultural Study of Authoritarianism. *J. Soc. Psychol.*, 1967, 72(1), 3-7.

Mednick, S.A. The Associative Basis of the Creative Process. *Psychol. Rev.*, 1962, 69, 220-232.

Meer, B. and Stein, M.I. Measures of Intelligence and Creativity. *J. Psychol.*, 1955, 39, 117-126.

Meng, J.J. American Thought: Contributions of Catholic Thought and Thinkers. *Nat. Cath. Educ. Assoc. Bull.*, 1957, 53, 113-120.

- Merrifield, P.R., Guilford, J.P., Christensen, P.A., and Frick, J.W. Interrelationships Between Certain Abilities and Certain Traits of Motivation and Temperment. J. Gen. Psychol., 1961, 65(1), 57-74.
- Milgram, S. Nationality and Conformity. Sci. Amer., 1961, 205(6), 45-52.
- Milgram, S. Group Pressure and Action Against a Person. J. Abnorm Soc. Psychol., 1964, 69(2), 137-143.
- Milgram, S. Liberating Effects of Group Pressure. J. Abnorm. Soc. Psychol., 1965, 1(2), 127-134.
- Milgram, S. Some Conditions of Obedience and Disobedience to Authority. Hum. Relat., 1965, 18, 57-76.
- Morrison, A. and McIntyre, D. The Attitudes of Students Towards International Affairs. Brit. J. Soc. Clin. Psychol., 1966, 5, 17-23.
- Moustakas, C. Creativity and Conformity. London: D. Van Nostrand, 1967.
- Munsterberg, E. and Mussen, P.H. The Personality Structures of Art Students. J. Personal., 1953, 21, 457-466.
- Murray, H.A. Vicissitudes of Creativity. In: Creativity and Its Cultivation, H.H. Anderson, 1959.

Myden, W. Interpretation and Evaluation of Certain Personality Characteristics Involved in Creative Production. *Percept. Mot. Skills*, 1959, 9, 139-158.

McClelland, D.C. The Urge to Achieve. *New Society*, Feb., 1967, No. 229.

McGhee, P.E. and Teevan, R.C. Conformity Behavior and Need for Affiliation. *J. Soc. Psychol.*, 1967, 72(1), 117-121.

McLean, F. The Happy Accident. *Sci. Mon.*, 1961, 53, 61-70.

McPherson, J.H. Environment and Training for Creativity. In: Creativity: Progress and Potential, C.W. Taylor, 1964, 129-154.

McGinnies, E. Attitudes Toward Civil Liberties among Japanese and American University Students. *J. Psychol.*, 1964, 177-186.

Nadler, E.B. Yielding, Authoritarianism, and Authoritarian Ideology Regarding Groups. *J. Abnorm. Soc. Psychol.*, 1959, 58, 408-410.

Neuwien, R.A. Catholic Schools in Action. South Bend, Ind.: Univ. Notre Dame Press, 1966.

Newcomb, T.M. and Hartley, E.L. (Eds.) Readings in Social Psychology. New York: Holt, 1947.

Nowlan, E.H. The Picture of the 'Catholic' which Emerges From Attitude Tests. *Lumen Vitae*, 1957, 12, 275-285.

O'Dea, T.F. American Catholic Dilemma. New York: Sheed and Ward, 1958.

Olmstead, J.A. and Blake, R.R. The Use of Simulated Groups to Produce Modifications in Judgment. *J. Personal.*, 1955, 23, 335-345.

Osborn, A.F. Applied Imagination. New York: Scribner, 1957, (rev. ed.).

Pallone, N.J. Explorations in Religious Authority and Social Perception. I. The Collar and Conformity. *Acta Psychol.*, 1964, 22, 321-337.

Parnes, S.J. and Brunelle, E.A. The Literature of Creativity. *J. Creat. Behav.*, 1967, 1(1), 52-109.

Parnes, S.J. and Meadow, A. Effects of 'Brainstorming' Instructions on Creative Problem Solving by Trained and Untrained Subjects. *J. Educ. Psychol.*, 1959, 50(4), 171-176.

PARRY, H.J. Protestants, Catholics and Prejudice (see: Argyle, 1958)

Piers, E.V., Daniels, J.M. and Quackenbush, J. The Identification of Creativity in Adolescents. J. Educ. Psychol., 1960, 51(6), 346-351.

Pine, F. and Holt, R.R. Creativity and Primary Process: A Study of Adaptive Regression. J. Abnorm. Soc. Psychol., 1960, 61, 370-379.

Powell, F.A. Open and Closedmindedness and the Ability to Differentiate Source from Message. J. Abnorm. Soc. Psychol., 1962, 65(1), 61-64.

Pratt, K.C. Differential Selection of Intelligence According to Denominational Preference of College Freshmen. J. Soc. Psychol., 1937, 8, 301-310.

Prince, G.M. The Operational Mechanism of Synectics. J. Creat. Behav., 1968, 2(1), 1-13.

Quin, P.V. Critical Thinking and Openmindedness in Pupils From Public and Catholic Secondary Schools. J. Soc. Psychol., 1965, 66, 23-30.

Rees, M.E. and Goldman, M. Some Relationships Between Creativity and Personality. J. Gen. Psychol., 1961, 65, 145-161.

Reid, J.B., King, F.J. and Wickwire, P. Cognitive and Other Personality Characteristics of Creative Children. Psychol. Reps., 1959, 5, 729-737.

Reitan, H.T. and Shaw, M.E. Group Membership, Sex Composition of the Group and Conformity Behavior. J. Soc. Psychol., 1964, 64, 45-51.

Ridley, D.R. and Birney, R.C. Effects of Training Procedures on Creativity Test Scores. J. Educ. Psychol., 1967, 58(3), 158-164.

Riegel, K. F., Riegel, R.M. and Levine, R.S. An Analysis of Associative Behavior and Creativity. J. Personal. Soc. Psychol., 1966, 4(1), 50-56.

Riesman, D. The Lonely Crowd. London: Yale Univ. Press, 1961.

Ripple, R. and May, F.B. Caution in Comparing Creativity and IQ. Psychol., Reps., 1962, 10, 229-230.

Rivlin, L.G. Creativity and the Self-Attitudes and Sociability of High School Students. J. Educ. Psychol., 1959, 50(4), 147-152.

Roe, A. The Making of a Scientist. New York: Dodd, Meade, & Co., 1952.

Rogers, C. Toward a Theory of Creativity. In: Creativity and Its Cultivation, H.H. Anderson, 1959.

Rokeach, M. Political and Religious Dogmatism: An Alternative to the Authoritarian Personality. Psychol. Monog., 1956, 70, No. 18.

Rokeach, M. The Open and Closed Mind. New York: Basic Books, 1960.

Rokeach, M. Authority, Authoritarianism, and Conformity. In: Conformity and Deviation, I.A. Berg and B.M. Bass, 1961, 230-257.

Rokeach, M. and Eglash, A. A Scale for Measuring Intellectual Conviction. J. Soc. Psychol., 1956, 44, 135-141.

Rosen, V.H. On Mathematical 'Illumination' and Mathematical Thought Process. A Contribution to the Genetic Development and Meta Psychology of Abstract Thinking. Psychoanal. Stud. Child, 1953, 8, 127-154.

Rossman, J. The Psychology of the Inventor. Washington, D.C.: Inventors Pub. Co., 1931.

Saltzstein, H.D., Rowe, P.B. and Greene, M.E. Spread of Social Influence on Children's Judgments of Numerosity. J. Personal. Soc. Psychol., 1966, 3(6), 665-674.

- Sampson, E.E. and Insko, C.A. Cognitive Consistency and Performance in the Autokinetic Situation. J. Abnorm. Soc. Psychol., 1964, 68(2), 184-192.
- Sappenfield, B.R. The Attitudes of Catholic, Protestant, and Jewish Students. J. Soc. Psychol., 1942, 16, 173-197.
- Schafer, R. Regression in the Service of the Ego: The Relevance of a Psychoanalytic Concept for Personality Assessment. In: The Assessment of Human Motives, G. Lindzey, 1958, 119-148.
- Schoonover, S.M. The Relationship of Intelligence and Achievement to Birth Order, Sex of Sibling, and Age Interval. J. Educ. Psychol., 1959, 50(4), 143-145.
- Scott, G. The R.C.'s: A Report on Catholics in Britain Today. London: Hutchinson, 1967.
- Secord, P.F. and Backman, C.W. Problems in Social Psychology. New York: McGraw-Hill, 1966.
- Seidman, J.M. (Ed.) Readings in Educational Psychology. Boston: Houghton-Mifflin, 1965.
- Sharnol, T. Originality. A Popular Study of the Creative Mind. London: T. Werner Laurie, 1917.
- Sherif, M. The Psychology of Social Norms. New York: Harper, 1936.

- Sherif, M. An Experimental Approach to the Study of Attitudes. *Sociom.*, 1937, 1, 90-98.
- Sherif, M. Group Influences Upon the Formation of Norms and Attitudes. In: Readings in Social Psychology, E.E. Maccoby, T.M. Newcomb, and E.L. Hartley, 1958, 219-232.
- Sherif, M. Conformity-Deviation, Norms and Group Relations. In: Conformity and Deviation, I.A. Berg and B.M. Bass, 1961, 159-198.
- Siegel, S. Non-Parametric Statistics. New York: McGraw-Hill, 1956.
- Siegmán, A.W. A Cross-Cultural Investigation of the Relationship Between Religiosity, Ethnic Prejudice, and Authoritarianism. *Psychol. Reps.*, 1962, 11, 419-424.
- Smith, C.E. The Effect of Anxiety on the Performance and Attitudes of Authoritarians in a Small Group Situation. *J. Psychol.*, 1964, 58, 191-203.
- Smith, H. The Religions of Man. New York: Harper & Row, 1958.
- Smith, R.J. Explorations in Nonconformity. *J. Soc. Psychol.*, 1967, 71, 133-150.

Smith, S., Murphy, D. and Wheeler, L. Relation of Intelligence and Authoritarianism to Behavioral Contagion and Conformity. Psychol. Reps., 1964, 14, 248.

Spearman, C. Creative Mind. Cambridge: Cambridge Univ. Press, 1930.

Spearman, C. The Abilities of Man. London: Macmillan, 1932.

Spearman, C. Creative Ability. London: Nisbitt, 1933.

Stein, M.I. Creativity and Culture. J. Psychol., 1953, 36, 311-322.

Stein, M.I. and Meer, B. Perceptual Organization in a Study of Creativity. J. Psychol., 1954, 37, 39-43.

Stewart, L. and Livson, N. Smoking and Rebelliousness. J. Consult. Psychol., 1966, 30(3), 225-229.

Stoddard, G.D. Creativity in Education. In: Creativity and Its Cultivations, H.H. Anderson, 1959.

Stricker, L.J., Messick, S. and Jackson, D.N. Suspicion of Deception: Implications for Conformity Research. J. Personal. Soc. Psychol., 1967, 5(4), 379-389.

Taylor, C.W. (Ed.) Creativity: Progress and Potential. New York: McGraw-Hill, 1964.

Taylor, C.W. Some Knowns, Needs, and Leads. In: Creativity: Progress and Potential, C.W. Taylor, 1964, 177-186.

Taylor, C.W. and Holland, J. Predictors of Creative Performance. In: Creativity: Progress and Potential, C.W. Taylor, 1964, 15-48.

Thibaut, J.W. and Strickland, L.H. Psychological Set and Social Conformity. J. Personal., 1956-7, 25, 115-129.

Thorndike, R.L. The Measurement of Creativity. In: Readings in Educational Psychology, J.M. Seidman, 1965.

Thurstone, L.L. Primary Mental Abilities. Psychol. Monog., No. 1.

Torrance, E.P. Cultural Discontinuities and the Development of Originality of Thinking. Except. Child., 1962, 29, 2-13.

Torrance, E.P. Education and Creativity. In: Creativity: Progress and Potential, C.W. Taylor, 1964, 49-128.

Torrance, E.P. Different Ways of Learning for Different Children. Keynote address, Ontario Association for Childhood Education, Toronto, Canada, October 31, 1964.

Torrance, E.P. Creativity: What Can Teachers Do? In: Readings in Educational Psychology, J.M. Seidman, 1965.

True, S. A Study of the Relation of General Semantics and Creativity. J. Exp. Educ., 1966, 34(3), 34-40.

Trueblood, D.E. The Logic of Belief. New York: Harper, 1942.

Tukey, J.W. Comparing Individual Means in the Analysis of Variance. *Biometrics*, 1949, 5, 99-114.

Van Zelst, R.H. and Kerr, W.A. Some Correlates of Technical and Scientific Productivity. *J. Abnorm Soc. Psychol.*, 1951, 46, 470-475.

Vidulich, R.N. and Kaiman, I.P. The Effects of Information Source Status and Dogmatism Upon Conformity Behavior. *J. Abnorm. Soc. Psychol.*, 1961, 63(3), 639-642.

Visher, S.S. A Study of the Type of Place of Birth and the Occupation of Subjects of Sketches in Who's Who in America. *Amer. J. Sociol.*, 1925, 30, 551-557.

Wallas, G. The Art of Thought. New York: Harcourt-Brace, 1926.

Weima, __. Authoritarianism, Religious Conservatism and Sociocentric Attitudes in Roman Catholic Groups. *Hum. Relats.*, 1965, 18, 291-239.

Welch, L. Recombination of Ideas in Creative Thinking. *J. Appl. Psychol.*, 1946, 30, 638-643.

Wells, W.D., Weinert, G., and Rubel, M. Conformity Pressure and Authoritarian Personality. J. Psychol., 1956, 42, 133-136.

White, J.B. and Alter, R.D. Dogmatism and Examination Performance. J. Educ. Psychol., 1967, 58(5), 285-289.

Whittaker, J.D. and Meade, R.D. Sex and Age Variables in Persuasibility. J. Soc. Psychol., 1967, 73, 47-52.

Wild, C. Creativity and Adaptive Regression. J. Personal. Soc. Psychol., 1965, 2(2), 161-169.

Willis, R.H. Conformity, Independence and Anti-Conformity. Hum. Relat., 1965, 18, 373-388.

Willis, R.H. Two Dimensions of Conformity-Nonconformity. Sociom., 1963, 26, 499-513.

Willis, R.H. and Hollander, E.P. An Experimental Study of Three Response Modes in Social Influence Situations. J. Abnorm. Soc. Psychol., 1964, 68, 150-156.

Wilson, R.C. Creativity. In; Education for the Gifted, Yearb. Nat. Soc. Stud. Educ., 1958, 57, 108-126.

Witty, P. The Gifted Child. New York: D.C. Heath, 1951.

Wrench, D. and Endicott, K. Denial of Effect and Conformity. J. Personal. Soc. Psychol., 1965, 1(5), 484-486.

- Yamamoto, K. Creativity and Sociometric Choice Among Adolescents. J. Soc. Psychol., 1964, 64(2), 249-261.
- Yamamoto, K. Role of Creative Thinking and Intelligence in High School Achievement. Psychol. Reps., 1964, 14, 783-789.
- Yamamoto, K. Evaluation of Some Creativity Measures in a High School with Peer Nominations as Criteria. J. Psychol., 1964, 58, 285-293.
- Yamamoto, K. A Further Analysis of the Role of Creative Thinking in High-School Achievement. J. Psychol., 1964, 58, 277-283.
- Yamamoto, K. Threshold of Intelligence in Academic Achievement of Highly Creative Students. J. Exper. Educ., 1964, 32(4), 401-405.
- Yamamoto, K., Lambright, M. and Corrigan, A. Intelligence, Creative Thinking and Sociometric Choice among Fifth Grade Children. J. Exper. Educ., 1966, 34(3), 83-89.